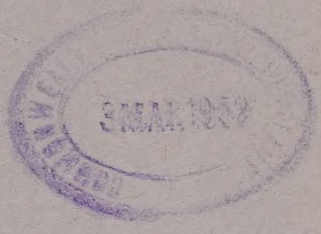
Vol. 22. No. 3. pp. 121 - 170
Abstracts 638 - 903

March, 1952

THE VETERINARY BULLETIN

COMPILED FROM WORLD LITERATURE



Prepared by the
COMMONWEALTH BUREAU OF ANIMAL HEALTH
WEYBRIDGE, SURREY
ENGLAND

Published by the
COMMONWEALTH AGRICULTURAL BUREAUX
FARNHAM ROYAL, ENGLAND

Price 5/- net

Annual Subscription £2

Commonwealth Agricultural Bureaux

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THE

VETERINARY BULLETIN

Vol. 22.] March, 1952 [No. 3.

DISEASES CAUSED BY BACTERIA AND FUNGI

SONKIN, L. S. (1951.) **The role of particle size in experimental air-borne infection.**—*Amer. J. Hyg.* **53.** 337-354. [Author's summary modified.] **638**

Aerosols containing *Pneumococcus* type I or *Streptococcus* group C were sprayed into a dynamic flow chamber by means of an adjustable peripheral jet atomizer. The particle size was varied by changing the atomizing air pressure, incorporating a non-volatile solute, glycerol, into the culture, or by spraying suspensions of bacteria in a dilute solution of glycerol in water. During each experiment a cascade impactor sample was taken to determine the concentration and distribution of bacteria in particles of different sizes. Groups of mice were exposed to the mists and the magnitude of each exposure was determined by multiplying the analytical concentration and time of exposure (Ct). The mortality of mice given varying exposures in the various particle size ranges was then recorded, and, in addition, those which died after exposure to *Streptococcus* group C mists were examined for the characteristic lesions of upper and lower respiratory tract infections produced by this micro-organism.

Results showed that lower respiratory infections following inhalation of the *Str. pyogenes* group C were due mainly to particles smaller than 1·8 μ in diameter. The Ct had to be raised about 10,000 times to kill 50% of the animals as the bacterial median diameter of the particles was increased from 1 to 12 μ. The incidence of upper respiratory infections was affected to a much smaller extent by changing the particle size; aerosols having a median diameter in the vicinity of 1 μ were about 50 times as lethal as those of 12 μ. Pulmonary infections occurred much more readily than upper respiratory lesions after mice had inhaled all but the coarsest aerosols. Mice were relatively resistant to infection by aerosols of *Pneumococcus* type I in all particle size ranges.

WEINSTEIN, L., COLBURN, C. G., SELTSER, R., MALLORY, G. K. & WARING, G. W., JR. (1951.) **Experimental streptococcal pneumonia. I. The pathologic and bacteriologic features of the untreated disease.**—*J. Immunol.* **67.** 173-181. **639**

WEINSTEIN, L., COLBURN, C. G., SELTSER, R. & MALLORY, G. K. (1951.) **Experimental streptococcal pneumonia. II. The effect of penicillin therapy on the pathologic and bacteriologic features.**—*Ibid.* 183-188. **640**

WEINSTEIN, L., COLBURN, C. G., SELTSER, R. & MALLORY, G. K. (1951.) **Experimental streptococcal pneumonia. III. The anatomical lesions produced by the injection of dead streptococci into the lung.**—*Ibid.* 189-191. [Authors' conclusions modified.] **641**

I. Pneumonia was produced in hamsters by the intratracheal injection of a strain of Group A, Type 3, β-haemolytic *Streptococcus* suspended in mucin. By varying the number of organisms injected it was possible to induce either a rapidly fatal pneumonitis or disease which underwent complete resolution within one week. The initial cellular response to invasion of the lungs by streptococci was almost entirely histiocytic. Neutrophile leucocytes were predominant 6–34 hours after infection. The cellular reactions in the severe and mild infections were qualitatively alike but differed quantitatively. Phagocytosis of streptococci was performed exclusively by histiocytes.

Formation of large pulmonary abscesses and massive intra-alveolar haemorrhage was conspicuous in fatal pneumonia in the hamster.

Bacteraemia did not occur in mild strepto-

NOTE.—*The* V.B. *references given in square brackets now refer to abstract numbers and not to page numbers.*

coccal pneumonia; it was an early and constant feature of the severe, fatal disease.

II. The treatment of streptococcal pneumonia in hamsters with penicillin did not alter the usual course of the development of anatomical changes in the lungs. The cellular response was more intense when therapy was delayed for six hours than when treatment was carried out earlier after infection. No gross differences were detectable in the type of cellular reaction in the pulmonary tissues of treated and untreated animals. Administration of the antibiotic immediately following the initiation of the infection did not prevent pulmonary abscess formation. Penicillin controlled the infection in the lungs in 12–42 hours depending on the size of the inoculum and the length of time elapsing between initiation of disease and beginning of therapy. Bacteraemia and/or death did not occur in treated animals.

III. The intratracheal injection of heat-killed *Str. pyogenes* in hamsters leads to the development of pulmonary lesions qualitatively identical to those produced by living organisms. Quantitative differences between the anatomical changes resulting from the activity of viable and non-viable streptococci are striking and are probably due to variations in the duration of stimulus to cellular response.

The failure of penicillin to alter the characteristic features of the reaction in the lungs in streptococcal pneumonia is probably accounted for by the ability of non-living streptococci to produce pulmonary lesions.

SCHMID, G. & KLINGLER, K. (1949.) Über die Schweine-Dysenterie. **[Dysentery in pigs.]** —*Schweiz. Arch. Tierheilk.* **91.** 232-237. **642**
[See also *V.B.* **19.** 2388 and **21.** 1287.]

Clinical symptoms of vibrionic dysentery in pigs and piglets and changes occurring in the stomach, large intestine, liver, kidneys, spleen, bladder, lungs and heart are described. The organisms were demonstrated in microscopic preparations from the mucous membrane of the stomach. Cultures of the vibrio on sheep blood agar were obtained from the stomach and large and small intestines. The colonies resembled those of *Br. abortus*. The vibrio is very sensitive to temperature.

An outbreak of the disease was reported three weeks after pigs had digestive trouble following the feeding of grain screenings. A veterinarian informed the authors that deaths from dysentery stopped when "denaturierte" potatoes [treated in such a manner as to indicate that they are not for human consumption] were fed. Cases had also been reported from two farms on which piglets had been bought from the same source.

Details were given of dosage with sulphamethazine.—C.M.S.

SACO, T. R. (1950.) Meningitis tuberculosa en bovinos. **[Tuberculous meningitis of cattle.]** —*Rev. Fac. Med. Vet., Lima.* **5.** 102-113. [English summary.] **643**

Seven cattle with typical symptoms of disease of the central nervous system were found to have tuberculous meningitis. Infection appeared to be blood-borne from primary lung lesions.—I. W. JENNINGS.

HAROLD, J. T. (1951.) **Spread of infection by streptomycin-resistant tubercle bacilli.**—*Lancet.* **261.** 658-659. [Author's summary copied *verbatim*.] **644**

Two cases of primary tuberculosis caused by streptomycin-resistant strains of tubercle bacilli are reported, and contact with the presumed sources of infection is described. Eight similar cases reported by others are summarised.

MYERS, J. A. (1951.) **Immunity in tuberculosis.**—*J. Amer. med. Ass.* **146.** 1492-1500. [Abst. from author's summary.] **645**

Fundamentally methods of controlling TB. consist of treating it as a contagious disease and thus preventing bacilli from invading the tissues of human beings and animals. This necessitates the use of the tuberculin test, X-rays, the microscope, culture mediums, animal inoculation and other procedures, as well as isolation and treatment of patients with contagious disease in hospitals and sanatoriums. Scores of physicians have long sought methods of artificially produced dependable immunity for TB. None have succeeded, probably because natural infection with virulent tubercle bacilli does not result in dependable immunity. B.C.G. is a living bovine type bacillus of reduced virulence. In culture media the virulence of B.C.G. fluctuates significantly. When introduced into human tissues it causes tuberculous lesions which may come under control in a few months. In some cases abscesses develop and regional lymph nodes discharge pus for many months. B.C.G. causes progressive and lethal TB. in silicotic animals as well as those on deficient diets. The amount of scientific work reported to prove its harmlessness in man is almost *nil*. B.C.G. or vole tubercle bacillus vaccine renders the tuberculin reaction useless as a diagnostic and epidemiological agent and diminishes or even eliminates much necessary public support by creating a sense of false security in the minds of the people.

The tuberculin reaction indicates only the presence of allergy, which is a prerequisite for development of clinical forms of TB. No method of identifying or measuring immunity or resistance to tubercle bacilli is available. Most observations on B.C.G. have been limited to those conditions that occur within a year or two after allergy is established by natural infection. There it is said to be 60–80% efficacious. These conditions constitute only about 3% of our problem. There is no evidence that it has any value in the remaining 97%.

No scientific adequately controlled study of B.C.G. has ever been conducted over a sufficient period of time to justify conclusions regarding its efficacy. However, the serious effort now being made by the Division of Tuberculosis of the U.S. Public Health Service deserves support.

The use of fundamental methods exclusively over the last 30 years has resulted in control of TB. among students of nursing and medicine, among American Indians, the general public and domestic animals—a control that has never been remotely approached anywhere by the use of an immunizing agent. These methods when properly executed are sure of accomplishment. At the present time they afford our only hope of eradicating TB.

SWEDBERG, B. (1951.) **Studies in experimental tuberculosis. An investigation of some problems of immunity and resistance.**—*Acta med. scand.* Suppl. No. 254. pp. 1-120. [In English.] **646**

Part I of this monograph describes the technique used in immunization experiments in mice and g. pigs, using intravenous injection of doses of tubercle bacilli standardized by count or by weight. Using groups of 5–10 animals, the mean survival time was taken as a measure of virulence and the test dose in the unvaccinated controls was adjusted so that the effect of vaccination in conferring protection could be most readily detected. White mice can be immunized with virulent tubercle bacilli, with attenuated organisms or with killed bacilli.

In Part II the application of this technique to study the effect of various bacterial antigens in immunizing against TB. is described. Tubercle bacilli from different clinical sources all behaved alike. Tubercle bacilli from frogs conveyed some protection, *M. phlei* did not. Specific immunization with B.C.G. was unaffected by simultaneous vaccination with *Haemophilus pertussis, Bact. coli* or organisms of the typhoid-paratyphoid group. Heat-killed virulent tubercle bacilli were as effective in mice as was living B.C.G.: heat-killed B.C.G. was ineffective.

Part III describes the effects of chemotherapeutic drugs, and hormones on immunity to TB. Large doses of *p*-amino salicylic acid or streptomycin did not reduce the immunizing effect of tubercle bacilli sensitive to these agents. Thyroxin rendered g. pigs less resistant to TB. Testosterone had no effect on resistance: large doses of oestrogens greatly accelerated the course of the disease, which may explain the reduced resistance of animals during pregnancy and the puerperium.—E. G. WHITE.

BRETEY, J. & LAMENSANS, A. (1951.) Procédé de purification de la tuberculine. **[The process of tuberculin purification.]**—*C.R. Acad. Sci., Paris.* 232. 1880-1882. **647**

By means of a salicylic acid precipitate in Sauton's medium all the tuberculinic substances present in the tubercle bacillus can be isolated. Repeated washings with various organic solvents yield a purified highly active tuberculin, the effect of which on the tuberculous animal is precisely similar to that of Old Tuberculin.

—W. R. BETT.

RANDALL, H. M., SMITH, D. W., COLM, A. C. & NUNGESTER, W. J. (1951.) **Correlation of biologic properties of strains of Mycobacterium with infra-red spectrums. I. Reproducibility of extracts of *M. tuberculosis* as determined by infra-red spectroscopy.**—*Amer. Rev. Tuberc.* 63. 372-380. [French and Spanish summaries.] **648**

This study was undertaken to find out to what extent the infra-red spectra of the complex mixtures composing the various fractions of the tubercle bacillus can be used in investigating the bacteriology. With sufficient care, the different fractions can be reproduced so as to give constant spectra, the spectrum of each fraction being characteristic of that fraction. This method can be employed as a control in growth and fractionation of cultures.

—W. R. BETT.

KOCUR, M. (1950.) Pokus o léčebné ovlivnění tuberkulosy specifickým ferment-antigenem. **[Experimental treatment of TB. with specific ferment antigen.]**—*Spisy vys. Školy Vet., Brno.* 18. Nos. 158-165. (165.) pp. 1-18. [French and Russian summaries.] **649**

Tests were made on g. pigs artificially infected and on cattle naturally infected with TB., using an antigen prepared from bovine-type tuberculin fermented by wine yeast, *Saccharomyces ellipsoideus*. It is claimed that when 10–20 injections of 1 ml. of the antigen were given to g. pigs infected with the M.L.D. of *M. tuber-*

culosis culture (160–320 bacilli), they did not develop tuberculous lesions, while lesions were present in controls.

Of 22 tuberculin-positive cattle given subcutaneous injections of 5–20 ml. of the fermented antigen, only 11 reacted positively when tested three months after the last injection. Of nine other positively reacting cattle treated similarly and kept on an isolated pasture, only two yielded positive tuberculin reactions, when tested after six months.—E. G.

WALKER, A. M. (1951.) **Chemotherapy of tuberculosis in man.**—*J. Amer. med. Ass.* **147.** 253-258. [Author's summary slightly modified.] **650**

Reducing the dosage of streptomycin to 1 gm., either daily or twice a week, has reduced toxicity without impairing therapeutic efficacy.

The concomitant daily administration of *p*-aminosalicylic acid has definitely delayed the emergence of streptomycin-resistant tubercle bacilli and has thereby made possible the desired continuation of effective therapy beyond four months, a procedure that is now being explored.

Preliminary observations indicate that concomitant administration of *p*-aminosalicylic acid and streptomycin may have further increased the survival rate of patients with meningeal or miliary tuberculosis.

Although many antibiotics and other drugs have been studied during the past 18 months, and although several of them undoubtedly have some bacteriostatic action on tubercle bacilli none of them promises a favourable comparison with streptomycin.

DEMARTEAU, H. (1951.) Sur les acides mycoliques de la souche bovine Vallée de *Mycobacterium tuberculosis*. **[Mycolic acid content of *Mycobact. tuberculosis*.]**—*C.R. Acad. Sci., Paris.* **232.** 2494-2496. **651**

Three mycolic acids have been isolated by chromatography from the Vallée bovine strain of the tubercle bacillus: α, β, γ. Their chemical formulae are given.—W. R. BETT.

WADDINGTON, F. G. (1951.) **Phenylmercuric dinaphthylmethane disulphonate ("Penotrane") in the treatment of bovine metritis.**—*Vet. Rec.* **63.** 594-597. **652**

Pharmacological details summarized illustrate the potent antibacterial activity of penotrane against Gram-positive and Gram-negative organisms. A sample of penotrane tested in the laboratory was bacteriostatic for *Corynebacterium pyogenes* at a dilution of 1:320,000. Clinical trials reported on eight cows with purulent uterine exudates indicated that the condition was successfully treated by intra-uterine injections of 0·1% aqueous solution of penotrane. The average dose was about 2–4 oz. into each uterine horn. The technique of treatment is described. Penotrane is harmless to uterine tissues.—K. J. SINCLAIR.

PETROVIĆ, D. (1951.) Dijagnostička vrijednost kvalitativne krvne slike kod svinjskog vrbanca. **[The blood picture in the diagnosis of swine erysipelas.]**—*Vet. Arhiv.* **21.** 249-264. [Abst. from German summary.] **653**

Thirty-seven pigs with swine erysipelas had neutrophilia with lymphopenia and a very low eosinophile and basophile count. P. stated that after clinical cure, contrary to statements in the literature, there was no significant increase in the number of eosinophiles.—C.M.S.

MACDOUGALL, J. A. (1951.) **Erysipeloid of Rosenbach. Review of thirty cases.**—*Lancet.* **260.** 1345-1346. [Abst. from author's summary.] **654**

A review of 30 cases of *Erysipelothrix rhusiopathiae* infection in human beings. M. used penicillin with success.

SNEATH, P. H. A., ABBOTT, J. D. & CUNLIFFE, A. C. (1951.) **The bacteriology of erysipeloid.**—*Brit. med. J.* November 3rd. 1063-1066. [Authors' summary copied *verbatim*.] **655**

Erysipelothrix rhusiopathiae was isolated from seven out of 20 patients with erysipeloid. The seven strains were culturally and biochemically homogeneous and indistinguishable from veterinary strains.

They were distributed among several antigenic groups, and were relatively uniform in their sensitivity to each of various antibiotics. They were most sensitive to penicillin, aureomycin, and chloramphenicol.

ZINK, A., DEMELLO, G. C. & BURKHART, R. L. (1951.) **Listeriosis—field and laboratory studies, and aureomycin activity.**—*Amer. J. vet. Res.* **12.** 194-198. **656**

The history was given of an outbreak lasting eight months involving six of 22 cattle, two of which died. A suspension of brain tissue in thioglycollate broth yielded a culture of *L. monocytogenes* which was pathogenic for mice, hamsters, rabbits and g. pigs, but not for chicks and resisted temperatures up to 100°C. *In vitro* the strain was sensitive to aureomycin hydrochloride (0·04 μg. per ml.) and resistant to terramycin hydrochloride, penicillin G, chloromycetin and streptomycin. Aureomycin was also effective *in vivo* in infected rabbits (5 mg. per lb.) and in infected mice with four

daily doses of 5–10 mg. per kg. Similar doses of penicillin were ineffective.

—MALCOLM WOODBINE.

BAKKER, S. (1950.) Immunisering tegen vogelcholera met een verzwakt levend vaccin. **[Immunization against fowl cholera with an attenuated live vaccine.]**—*Tijdschr. Diergeneesk.* **75.** 815-826. [English summary.] **657**

After 180 passages on crystal violet serum agar *Pasteurella aviseptica* was attenuated so that mice withstood 0·2 ml. of serum broth culture subcutaneously or intraperitoneally; it was still slightly virulent for fowls. The attenuated strain was freeze-dried for the preparation of a vaccine.

Details are given of small numbers of fowls inoculated with the vaccine and submitted a fortnight later to infection. The results were considered to be useful.—C. A. VAN DORSSEN.

GORDON, R. F. (1950.) **Salmonella infections of poultry.**—*Irish vet. J.* **4.** 194-196 & 209-212. **658**

G. reviewed the historical aspects of *Salmonella* infections including *S. pullorum*. The success of official testing schemes in the control of the latter infection was stressed.

—D. LUKE.

SMITH, H. W. & BUXTON, A. (1951.) **An outbreak of *Salmonella schwartzengrund* infection in poultry.**—*J. Path. Bact.* **63.** 459-463. [Authors' summary modified.] **659**

An outbreak of *S. schwartzengrund* infection in young chicks and turkey poults is described. Infection appeared to result from the contamination of food with the excreta of infected rats or mice.

S. schwartzengrund was isolated from the faeces of wild rats, adult turkeys, a mouse, and a rook. The faeces of 100 sparrows trapped on the farm, and those of six cats, 20 cows and nine horses were negative for salmonella. One of ten pigs and one of ten ducks were, however, found to be excreting salmonella. *S. schwartzengrund* was not isolated from any of 250 rats from neighbouring districts, but the faeces of one contained *S. typhi-murium*.

JØRGENSEN, A. & MARTHEDAL, H. E. (1951.) Om fjerkraesalmonelloser. Serologiske, kulturelle og epidemiologiske undersøgelser. **[Salmonella infections in fowls. Serological, cultural and epidemiological studies.]**—*Nord. Vet.-Med.* **3.** 271-296. [In Danish.] [English and German summaries. Abst. from English summary.] **660**

Serological and cultural studies on 219 *Salmonella* strains isolated in Denmark in 1946-48 from infected fowls are described. No connexion could be demonstrated between the antigenic structure of a strain and its fermentation reactions.

LEMBKE, A. & KÖRNLEIN, M. (1950.) Das Brucelloseproblem in der Literatur der letzten 20 Jahre. **[Literature on brucellosis during the last 20 years.]**—*Zbl. Bakt. I.* (*Ref.*) **147.** 449-531. **661**

An extensive review. There are twelve chapters, dealing respectively with types of brucella and their characters; diagnosis; mixed infections with other pathogens; incidence of types of brucella; brucella infection in the various species of domestic animals; experimental animals; incidence of brucella infection; types of infection; aetiology of brucellosis; therapy; damage resulting from brucellosis.

WILSON, M M. & MERRIFIELD, E. V. O. (1951.) **The antiglobulin (Coombs) test in brucellosis.**—*Lancet.* **261.** 913-914. [Authors' summary copied *verbatim*.] **662**

The application of the antiglobulin technique of Coombs to the detection of brucella agglutinins is described. This method showed a significant titre in 17 cases of probable or possible brucellosis in which the conventional test was negative from 1/20 to 1/5120. The method eliminated the prozone, which was present in 13 cases where the conventional test was positive; it may therefore make safe the use of a screening test at 1/20 dilution. Possibly the use of the modified Coombs test may be of value in the future study of brucellosis.

SCHUBERT, J. H. (1951.) **A catalase liver extract as a growth stimulant for fastidious *Brucella* cultures.**—*Amer. J. clin. Path.* **21.** 894-896. [Author's summary slightly modified.] **663**

A liver extract was prepared according to a method for isolating catalase. This substance was shown to improve greatly and to speed the growth of recently isolated fastidious *Brucella abortus* strains on tryptose agar.

TERNI, M. & TESI, A. (1949.) Sensibilità delle brucelle all'aureomicina. **[Sensitivity of *Brucella* organisms to aureomycin.]**—*Boll. Ist. sieroter., Milano.* **28.** 259-263. [Abst. from English summary.] **664**

The growth of all of sixty-one *Brucella* strains (51 *melitensis* and ten *abortus*) in fluid medium was inhibited by 1 μg. per ml. aureomycin. Thirty-seven among 39 *melitensis* and four among six *abortus* strains were inhibited by 0·5 μg. per ml. The action on

Brucella appeared to be almost exclusively bacteriostatic. The significance of delayed development in the presence of initial inhibiting doses of aureomycin was discussed.

Ross, H. E., Warren, M. E. & Barnes, J. M. (1949.) *Clostridium welchii* **iota toxin: its activation by trypsin.**—*J. gen. Microbiol.* **3.** 148-152. 665

The type of *Cl. welchii* (to be designated *Cl. welchii* type E) described by Bosworth was isolated from the udders of ewes on farms infected with lamb dysentery. The toxicity of filtrates from bacteria not older than 5–7 hours was increased when incubated with trypsin. Titration with various antisera indicated that this increase in toxicity was due to the formation of iota toxin from a prototoxin in the presence of crude trypsin preparations.—E. Eden.

Dinter, Z. & Kull, K.-E. (1951.) Ergänzende Untersuchungen über den Botulismus beim Nerz. **[Further studies on botulism in mink.]** —*Nord. Vet.-Med.* **3.** 297-311. [In German. English and Swedish summaries. Abst. from English summary.] 666

Botulinum toxin Type C caused food poisoning on three mink farms in Sweden during 1949-50. A peroral dose of 0·01 ml. of broth culture of *Cl. botulinum* Type C killed mink in three days. Botulinum toxoid Type C gave protection for up to seven months, but no immunity was found in mink which had recovered from botulism.

Keppie, J. (1951.) **The pathogenicity of the spores of** *Clostridium botulinum*.—*J. Hyg. Camb.* **49.** 36-45. [Author's summary slightly modified.] 667

The injection of mice with botulinum spores, freed from all traces of superficial toxin, can cause death but only if a very large number are given. This number was found in the case of a highly toxic strain to be of the order of 20 million spores given intramuscularly. This dose was fatal in the absence of spore germination. It is concluded that in botulism in human beings the spores of *Cl. botulinum* present in spoiled foodstuffs are not of importance compared with the toxin produced by the initial growth of the contaminating organisms. Toxin could be demonstrated in the cytoplasm of botulinum spores when these were disintegrated by mechanical means. This is of theoretical interest as the toxin within the spores is more heat-stable than the extracellular form.

A local anaerobic myositis could be produced in mice by the intramuscular injection of spores plus 2·5% $CaCl_2$. The number of viable spores in the LD50 was of the order of 50,000. 2·5% calcium chloride solution was shown regularly to cause a drop in the number of botulinum spores in a given suspension of some 40% and a parallel loss of viability of about 60%.

Danielson, I. S. & Bolton, R. (1950.) **Laboratory studies on the immunizing value of hemorrhagic septicemia bacterin and blackleg bacterin.**—*Proc. U.S. Livestock sanit. Ass.* 54*th Ann. Meeting.* pp. 259-271. [Authors' summary modified.] 668

An evaluation of the antigenic value of the *Cl. chauvoei* component in bacterins can be obtained by immunity studies in g. pigs. To obtain consistent results, the challenge culture should be accompanied by an activating agent such as calcium chloride. To establish solid immunity in guinea pigs, they must be given two immunizing doses of the bacterin. No attempt has yet been made to correlate the protective value of a *Cl. chauvoei* bacterin measured in guinea pigs with the results that can be expected in the field.

Data are presented demonstrating that an immunogenically effective *Pasteurella multocida* bacterin can be evaluated by immunity studies in mice. To establish marked resistance in mice to laboratory challenge of *Past. multocida*, two immunizing doses of the bacterin must be given. Data are presented demonstrating the lack of cross-immunogenic protection of selected strains of *Past. multocida* as measured in mice.

Reiss, F. & Doherty, D. D. (1951.) **Podophyllum resin in treatment of tinea capitis.**—*J. Amer. med. Ass.* **147.** 225-226. [Authors' summary slightly modified.] 669

A report is submitted of 121 cases of tinea capitis treated with a 0·2% resin of podophyllum ointment alone and in combination with X-ray epilation. Fifty-six patients were cured, 26 with X-ray epilation combined with podophyllum resin treatment and 30 with podophyllum resin treatment alone; 19 improved and in 21 there was no change. The agent was useful in some cases of tinea capitis caused by *Microsporon audouini, M. lanosum, Trichophyton crateriforme* and *T. sulfureum*. The length of time required to achieve clinical cure in those cases in which podophyllum resin ointment was used alone did not differ appreciably from that in which both podophyllum resin and X-ray epilation were used.

Edward, D. G. ff. & Fitzgerald, W. A. (1951.) **The isolation of organisms of the pleuropneumonia group from dogs.**—*J. gen. Microbiol.*

5. 566-575. [Authors' summary slightly modified.] 670

The finding of a pleuropneumonia-like organism associated with infertility and epididymitis in a dog led to the examination of throat and vaginal swabs from all the animals in a breeding kennel. Pleuro-pneumonia-like organisms were isolated from the majority of samples. Strains differed in colonial appearances, and a classification into types based on these differences was confirmed by the serological demonstration that each type was antigenically distinct. Nearly all the strains belonged to one of three types, provisionally called α, β and γ. Each type was regarded as a distinct species of the pleuro-pneumonia group, and its biological properties were studied.

EDWARD, D. G. ff. & FITZGERALD, W. A. (1951.) **Cholesterol in the growth of organisms of the pleuropneumonia group.**—*J. gen. Microbiol.* 5. 576-586. [Authors' summary copied *verbatim.*] 671

Representative strains of the pleuropneumonia group, originally isolated from animals, grew well on a basal medium containing infusion broth, peptone, yeast extract and agar when this was further enriched with horse serum. The serum could be replaced by an ethereal extract of egg-yolk and fractionation of this suggested that cholesterol might be the active substance promoting growth. Growth was obtained when cholesterol (0·01 mg./ml.) was added to the basal medium, together with starch or bovine albumin. Addition of the acetone-insoluble fraction of egg-yolk with cholesterol gave better results, growth of six of the eight strains tested being equal to that on serum agar: the lecithin and kephalin fractions after purification were less effective. No growth was obtained when starch, bovine albumin or the acetone-insoluble lipid was added to the medium without cholesterol. Cholestanol and stigmasterol were as effective as cholesterol in promoting growth. Oleic acid in high concentrations (>0·05 mg./ml.) inhibited growth. Both lipid and protein fractions of serum appeared to be concerned in its ability to promote growth.

STEELE-BODGER, A. (1951.) **Streptomycin as a bactericidal agent against *Corynebacterium pyogenes* and *Staphylococcus aureus* infections in dairy cattle.**—*Vet. Rec.* 63. 564-565. 672

Good results were obtained by streptomycin treatment of mastitis due to infection with staphylococci or *C. pyogenes*. Parenteral application of the drug proved more effective than infusion into the udder. A cow with a wound, infected with *C. pyogenes*, also responded well to this treatment.

—A. MAYR-HARTING.

JANDÁSEK, L. (1949.) Dans quelle mesure l'antagonisme microbien est-il influencé par l'adaptation au substrat? **[To what extent is bacterial antagonism influenced by adaptation to substrate?]**—*Schweiz. Z. Path. Bakt.* 12. 128-133. [In French. English, German and Italian summaries. English summary modified.] 673

The antagonistic effect of broth filtrates of *Pseudomonas pyocyanea* against *B. anthracis* is enhanced when a strain of *Ps. pyocyanea* is adapted to assimilate organic products of *B. anthracis*. The antagonistic principle therefore is of an adaptive nature. The same phenomenon was not observed in *Bact. coli*.

I, II & III. WEBB, M. (1951.) **The influence of magnesium on cell division. IV. The specificity of magnesium. V. The effect of magnesium on the growth of bacteria in chemically-defined media of varying complexity. VI. The action of certain hydrolytic enzymes on the filamentous and chain form of Gram-positive rod-shaped organisms.**—*J. gen. Microbiol.* 5. 480-484; 485-495 & 496-501. [Author's summaries copied *verbatim.*] 674

I. Magnesium exerts a specific function in (a) the formation of the Gram complex, and the activation of cell division in certain Gram-positive bacteria, and (b) activation of bacterial growth. Of a series of divalent metallic ions, only manganese is capable of partially replacing magnesium in the above processes.

II. The growth of bacteria in chemically-defined media containing mixtures of amino-acids is less dependent upon the magnesium concentration than in simple media composed of salts, glucose or glycerol and a single source of nitrogen. In the more complex chemically-defined media growth initially increases rapidly with, and then becomes independent of, the magnesium concentration. Gram - positive bacilli fail to grow when the magnesium content of the medium is less than 0·66 p.p.m., whereas this amount of magnesium is almost sufficient to maintain maximum growth of the Gram-negative bacteria. In addition, a deficiency of magnesium (i.e. *c.* 1–5 p.p.m.) inhibits the cell division of the Gram-positive rod-shaped organisms, and results in the formation of filamentous cells.

III. The chains which are formed when rod-shaped Gram-positive bacteria are grown

in media containing low concentrations of magnesium, undergo fission when exposed to the action of lysozyme. This effect is not produced by various other hydrolytic enzymes including the carbohydrases, cellulase and hyaluronidase. Fragmentation of the filamentous forms of the Gram-positive organisms, however, is not produced by lysozyme. A crude preparation obtained from mechanically disintegrated *Clostridium welchii* cells resembled lysozyme in its action on the magnesium-deficient organisms.

SCHUBERT, H. (1951.) Allgemeine Kinetik der bakteriellen Lebensreaktionen. I. Reaktionen bei konstanter Intensität. **[General kinetics of bacterial life reactions.]**—*Zbl. Bakt. I. (Orig.)* **157.** 187-206. [English, French and Russian summaries. Abst. from English summary.] **675**

Based on a study of antagonism within the bacterial cell S. developed a wave theory to explain the physiological life cycle of bacterial colonies by undulations. Changes brought about by physical or chemical influences are interpreted as interventions in physiological life. This theory presents many analogies to the reaction kinetics of multicellular organisms as well as to the physical behaviour of inanimate particles.

KLIENEBERGER-NOBEL, E. (1951.) **The L-cycle: a process of regeneration in bacteria.**—*J. gen. Microbiol.* **5.** 525-530. [Author's summary copied *verbatim.*] **676**

From a study of the mode of production of the L-phase from the bacillary phase and of the reversion of the L-phase into bacilli, by phase-contrast microscopy and in stained preparations, it appears that the L-cycle is a process of regeneration in bacteria.

See also absts. **889** (report, Scotland); **890** (report, Australia); **892** (report, Denmark); **893-894** (reports, Holland); **895-896** (reports, Sweden); **897-899** (reports, U.S.A.).

DISEASES CAUSED BY PROTOZOAN PARASITES

FIENNES, R. N. T.-W.- (1950.) **The cattle trypanosomiases: cryptic trypanosomiasis.**—*Ann. trop. Med. Parasit.* **44.** 222-237. **677**

A pre-primary or cryptic stage of trypanosomiasis occurs naturally and itself may cause death. Evidence is submitted from demonstration of antibody in premune animals by mouse-protection tests, blood picture in *T. vivax* infection before the parasites appear in the plasma and the results of subcurative and prophylactic therapy. After the prophylactic use of antrycide, *T. vivax* and *T. congolense* were detected in smears of the prescapular lymphatic glands. F. suggests that the small numbers of parasites appearing at rare intervals in the blood during cryptic infections seem to be due to an overspill from an active tissue focus, rather than the active cause of symptoms of disease.—JAS. G. O'SULLIVAN.

SQUIRE, F. A. (1951.) **Seasonal variation in the incidence of** *Trypanosoma vivax* **in** *Glossina palpalis* **(R.-D.).**—*Bull. ent. Res.* **42.** 371-374. [Author's summary copied *verbatim.*] **678**

Over 3,000 examples of *G. palpalis* were age-grouped and dissected for *T. vivax* over a period of a year. The incidence of infection throughout was highest in Age-group 3 and lowest in Age-group 1 [insects grouped according to wing colour and fraying]. There was a marked seasonal fluctuation, the incidence being highest during the months of heavy rainfall, *i.e.* August to October, and lowest in the driest. It has been suggested that the rise in the rate of infection during the rains is merely due to the increasing average age of the fly population, but by the method of age grouping it is shown that this is not the case.

The degree of infection in *G. palpalis* in Sierra Leone is comparable with that of *G. tachinoides* in Nigeria. It is not thought that the seasonal variation in the incidence of infection can be ascribed to changes in the type and abundance of food. The true cause of the fluctuating incidence of infection like the source of infection is unknown. The failure to recognize seasonal differences in the rate of infection has led to some important practical misconceptions.

MUDALIAR, S. V. & RAY, H. N. (1947.) **Studies on surra. I. Cattle surra and some problems connected with the disease.**—*Indian vet. J.* **23.** 281-289. **679**

The authors described in detail the carrier and vector problems of bovine trypanosomiasis. Cattle remain carriers of the disease for about six months and in the absence of re-infection apparently recovered cattle are a continuous source of infection. For successful eradication of bovine surra, the detection of carriers, their treatment, and the control of biting flies are therefore of the utmost importance. Cases of surra may be diagnosed by microscopic examination of blood smears as well as by biological and serological methods. Suramin has given good results. Tartar emetic can also be suc-

cessfully used in cases in which the number of organims in the peripheral blood is small.

—H. S. DHILLON.

SEIBOLD, A. & ERCEGOVAC, D. (1949.) "Antrypol" Suramin B.P. kao hemoterapeutikum protiv durine. [**The cure of *Trypanosoma equiperdum* infection with "antrypol" suramin B.P.**]—*Bilten. vet.* **2.** 30-44. [English and German summaries. Abst. from English summary.] **680**

Antrypol [sodium salt of *m*-benzoyl-*m*-amino-*p*-methylbenzoyl-1-amino-naphthalene-4:6:8-trisulphonic acid] in 1:2,000 solution given at a dose rate of 0·000003 g. per g. body weight, protected infected rats, while all the controls died in three days.

—JAS. G. O'SULLIVAN.

VAN HOOF, L., HENRAD, C. & PEEL, E. (1947.) Observations sur le *Trypanosoma brucei* produisant des infections naturelles dans une région intestée de *Glossina palpalis*, en l'absence de *G. morsitans*. [**Observations on *T. brucei* producing natural infections in a *Glossina palpalis* region, in the absence of *G. morsitans*.**]—*Liber Jubilaris J. Rodhain. (Soc. Belge Méd. Trop., Brussels.) Dec.* 359-380. **681**

In some districts of the Belgian Congo where the only carrier was *G. palpalis*, three strains of *T. brucei* were isolated from natural infections in a dog, a pig and a goat. These strains were used for experimental infection of dogs, pigs, goats, monkeys and human volunteers. Pigs usually recovered within 15 months and were immune to subsequent infection with *T. gambiense*, but some remained susceptible to *T. rhodesiense*. As there are hardly any game in these districts it is believed that pigs may act as reservoirs of the trypanosome. In goats the infection was acute or subacute with encephalitis; the animals died 1–7 months after infection. Dogs developed an acute or subacute infection accompanied by keratitis, a characteristic which could be utilized in differential diagnosis of *T. brucei*. *Cercocebus* monkeys were not very susceptible, whereas *Cercopithecus* monkeys developed an acute and fatal infection. Passage in *Cercocebus* monkeys increased pathogenicity and transmissibility. Experimentally infected tsetse flies transmitted the infection cyclically to g. pigs.

Normal human serum had a trypanocidal effect on all three strains when given to infected g. pigs at doses of 3–6 ml. Doses of 1 ml. acted as a prophylactic.

Cyclical transmission of canine and caprine strains, which had been rendered resistant to human serum by passage in animals, was carried out in seven volunters, in the blood of one of whom trypanosomes were demonstrable microscopically; but attempts to infect experimental animals with this blood failed.

The curative effect of various drugs was also studied. Tryparsamide at doses of 0·3 g. per kg. body weight cured the infection in g. pigs; three injections each of 0·05 g. of tartar emetic cured dogs. Suramin at doses of 0·05 g. per kg. body weight was successful against all three strains, whereas surfen C was ineffective.—E.G.

KLEINSCHMIDT, A. (1950.) Chronische Naganainfektion der Ratte unter dem Einfluss von Menschenserum. [**Chronic nagana in rats under the influence of human serum.**]—*Z. Hyg. Infektkr.* **131.** 42-45. **682**

The literature was reviewed, and experiments were described to show that white rats, infected with *T. brucei*, which would normally die in three or four days, can be kept alive for several months by intraperitoneal injection of normal (unimmunized) human serum.

—W. R. BETT.

KROÓ, H. & RODRÍQUEZ-PÉREZ, P. (1949.) Spontaner Umschlag der chemotherapeutischen Empfindlichkeit bei Trypanosomen. [**Spontaneous change in the chemotherapeutic sensitivity of trypanosomes.**]—*Schweiz. Z. Path. Bakt.* **12.** 67-71. [English, French and Italian summaries. Abst. from English summary.] **683**

An account of temporary drug-fastness to tri- and pentavalent aromatic arsenical compounds which developed in a strain of *T. brucei*.

KRANEVELD, F. C. & MANSJOER, M. (1951.) Onderzoekingen over bloedparasieten. IV. Trypanosomen bij de kip in Indonesië. [*Trypanosoma* **infection in fowls in Indonesia.**]—*Hemera Zoa.* **58.** 136-145. [English, French, German and Indonesian summaries. Abst. from English summary.] **684**

The authors recorded trypanosomes, probably *T. gallinarum*, from a hen. Wide variation in size was seen.—JAS. G. O'SULLIVAN.

GUILHON, J. (1948.) Leishmaniose canine autochtone dans la région parisienne. [*Leishmania* **infection in dogs in the Paris region.**]—*C.R. Acad. Sci., Paris.* 226. 1399-1400. **685**

The first case of canine leishmaniasis in Paris is reported, but it was not discovered how the dog became infected.

—JAS. G. O'SULLIVAN.

Jaśkowski, L. (1950.) Badania nad trichomoniazą buhajów. [**Trichomoniasis in bulls.**] —*Med. weteryn.* **6.** 579-584. [English and Russian summaries.] 686

A general account of trichomoniasis in bulls and of the manner in which the disease spreads.—John R. Mitchell.

Sluming, C. R. (1950.) **Trichomonicidal action of dinaphthalene methane silver disulphonate.**—*Brit. med. J.* May 13th. pp. 1116-1117. 687

Six weekly paintings with 1% aqueous dinaphthalene methane silver disulphonate, of the vagina of women infected with *Trichomonas vaginalis,* followed by insufflation of acetarsol compound powder with the use of acetarsol compound pessaries daily, gave disappearance of symptoms, with no recurrence in six months, in 20 resistant cases.—R. Marshall.

Signol, J. (1950.) Essais de traitement de la coccidiose bovine par la thiodiphénylamine. [**Treatment of *Eimeria* infection in cattle with phenothiazine.**]—*Rev. Méd. vét., Lyon et Toulouse.* **101.** 247-252. 688

Eimeria infection in cattle may be satisfactorily treated with phenothiazine, 300 mg. per kg. being given and repeated if necessary for two or three consecutive days.—N. Dean.

Anczykowski, F. (1950.) Kokcidioza u psów. [**Coccidiosis in dogs.**]—*Med. weteryn.* **6.** 659-663. 689

Coccidiosis has been observed in Poland in young dogs 1–6 months old, particularly highly bred, poorly nourished animals kept in unhygienic conditions, the parasites concerned being *Eimeria canis* and *Isospora rivolta.* Diagnosis, duration and treatment are described in detail.—J. R. Mitchell.

Meynard, J.-A. (1951.) Piroplasmose congénitale chez le cheval. [**Congenital piroplasmosis in foals.**]—*Rec. Méd. vét.* **127.** 340-342. 690

M. reported the finding of *B. caballi* in the blood of a nine month old aborted equine foetus. The mare had had an attack of piroplasmosis 37 days after being served.

—D. Luke.

Cassamagnaghi, A. & Cassamagnaghi, A., Jr. (1949.) El primer caso de *Nuttalliosis* comprobado en el Uruguay. [**The first case of *Babesia equi* infection recorded in Uruguay.**] —*An. Fac. Vet. Montevideo.* **5.** 181-194. 691

For the first time a case of *B. equi* infection has been detected in Uruguay. One of the vectors, *Rhipicephalus sanguineus* is known to occur in the country. The case described here occurred in an animal already ill with equine infectious anaemia.—I. W. Jennings.

Metianu, T. (1950.) Étude critique sur les piroplasmoses et piroplasmes des bovidés en Roumanie. [**The piroplasms and piroplasmoses of cattle in Roumania.**]—*Ann. Parasit. hum. comp.* **25.** 255-266. 692

A survey of the various types of bovine piroplasmosis occurring in Roumania. Species of *Theileria* and *Anaplasma* are included. Detailed information is given on size, structure, vectors, symptoms of disease in the hosts and geographical distribution.—L. P. Joyner.

Botija, R. S. (1950.) Sobre la presencia de la "Babesia ovis" en los ovidos de España. [*B. ovis* **in Spain.**]—*Trab. Inst. Biol. anim. Madr.* **9.** pp. 253-258. 693

A note on *B. ovis* infection in a flock of sheep.—I. W. Jennings.

Mlinac, F. & Romić, S. (1948.) Theileria dispar u kotaru dakovačkom. Prinos ustanovljenju piroplazmoza u Hrvatskoj. [*Theileria dispar* **in the district of Djakovo. Piroplasmosis in Croatia.**]—*Vet. Arhiv.* **18.** 1-9. [German and Russian summaries. Abst. from German summary.] 694

It is stated that the following piroplasms have spread into Croatia from east and southeast Yugoslavia, *Babesia caballi, B. equi, B. bigemina, B. bovis* and *B. ovis.*

Theileria dispar appears to have been introduced into Djakovo by an ox-team, which formed part of a military convoy from Bosnia or Serbia, during the Second World War. Blood smears from eight affected cows also revealed *B. bovis.* Prontosil was administered and all animals recovered.—M. L. Clarke.

Van Saceghem, R. (1951.) Un remède spécifique contre la theilériose. [**A specific treatment for bovine theileriasis.**]—*Rev. Path. comp.* **51.** 134. 695

The author considered that the administration over a period of five days of macerated leaves of *Coleus aromaticus* (Labiatae) to calves infected with *Th. parva* was a specific treatment for the disease.—J. Deom.

Ray, H. N. (1950.) **Hereditary transmission of *Theileria annulata* infection in the tick,** *Hyalomma aegyptium* Neum.—*Trans. R. Soc. trop. Med. Hyg.* **44.** 93-104. 696

Adult *H. aegyptium* were collected from cattle in the Multan district, West Punjab, where there was serious *T. annulata* infection in calves. The ticks were bred on uninfected

calves up to all stages. Larvae and nymphae from these ticks were placed on two clean calves which both remained healthy. Unfed adult progeny, however, when placed on new calves and allowed to engorge, produced the infection. Second, third, and in one case, fourth generation adults were also capable of transmitting the disease, but although the organisms were demonstrable in the acini of the salivary glands of a few fifth and sixth generation adults no infection occurred.—B. A. THURSTON.

FRICKERS, J. (1948.) Experimenteel onderzoek van de runderparasieten *Babesia bigemina* en *Anaplasma marginale* in Suriname. [*Babesia bigemina* **and** *Anaplasma marginale* **in cattle in Surinam.**]—*Tijdschr. Diergeneesk.* **73.** 517-539. [Abst. from English summary.] 697

A general account of experiments with piroplasmosis and anaplasmosis in Surinam. Observations were made both in Surinam and Utrecht on cattle with strains from Surinam.

Details are given of periods of incubation after tick bite and after intravenous inoculation. An account is also given of inoculation with both piroplasms and anaplasms of Brahman cattle imported from the U.S.A. into Surinam.

DE ROBERTIS, E. & EPSTEIN, B. (1951.) **Electron microscope study of anaplasmosis in bovine red blood cells.**—*Proc. Soc. exp. Biol., N.Y.* **77.** 254-258. [Authors' summary slightly modified.] 698

Erythrocyte membranes from calves infected with *Anaplasma marginale* were studied under the electron microscope. The classical single marginal body of the parasite appears to be constituted of a central undivided mass and peripheral elementary bodies of high electron density, 170 to 220 mμ in diameter. In some cases the whole mass of the parasite is divided into these small submicroscopic bodies. In other erythrocytes the elementary bodies are dispersed and have a tendency to grow up. Distribution curves on measurements of 119 elementary bodies were presented. The presence of the submicroscopic forms of the parasite is discussed in the light of the clinical and hematological evolution of the disease, the multiplication and the probable life-cycle of the parasite within the blood stream.

See also absts. **893** (report, Holland); **897** (report, U.S.A.); **900** (book, biochemistry and physiology of protozoa).

DISEASES CAUSED BY VIRUSES AND RICKETTSIA

EPSTEIN, B. & GURRI, J. (1950.) Consideraciones histopatológicas sobre la fiebre aftosa. [**Histological study of foot and mouth disease.**] pp. 23. Montevideo: Minist. Ganad. Agric. [English summary.] 699

Pathological changes were observed in the muscle fibres of the basal epithelium and chorion vessels of the tongue in cattle with F. & M. disease. By means of silver staining techniques, various changes were shown to occur in the structure of the motor and sensory nerve fibres.—ANITA M. MANDL.

CUNHA, R., DA SILVA PASSOS, W. & MONTEIRO DE CARVALHO, J. (1950.) Tipificação de amostras brasileiras de virus aftoso pela prova de fixação de complemento. [**Typing of Brazilian strains of foot and mouth disease virus by complement fixation.**]—*Arq. Inst. Biol. anim., Brasil.* **1.** 1-6. [Abst. from English summary.] 700

Typing of F. & M. disease virus by complement fixation is described. Of sixteen strains studied eight were type A, four were type O and four type C.—G. V. LAUGIER.

GIRARD, H. & MACKOWIAK, C. (1950.) Durée de l'immunité et vaccination de rappel en matière de fièvre aphteuse. [**Duration of immunity following vaccination against foot and mouth disease.**]—*Rev. Immunol. Therap. antimicrob.* **14.** 271-278. 701

From observations provided by veterinarians in the field and from the results of their own tests, the authors conclude that the immunity of cattle vaccinated with an aluminium hydroxide type of F. & M. disease vaccine begins to wane in about six months. This waning immunity may, however, be strengthened by revaccinating at about this time with approximately half the dose used initially.

—W. M. HENDERSON.

SALCEDO, G. O. (1950.) Investigacion sobre la conservacion del antigeno fijador del complemento del virus aftoso en soluciones reguladoras glicerofosfatadas en relacion a su pH. [**The keeping quality of frozen antigens for complement-fixation tests in foot and mouth disease.**]—*Gac. vet. B. Aires.* 12. 158-175. 702

pH records in glycerophosphate solutions using antigens from virus obtained from tongue epithelium show that pH values of 6·8–8·0 are optimum for storage; pH 6·8 is recommended for preserving material as received from the field, and pH 7·6 for fresh material. The keep-

ing quality of antigens of high titre is better than that of antigens of initially low titre.

—K. J. Sinclair.

Starr, L. E., Stafford, A. L. & Dye, O. B. (1949.) **Progress report on avianized anti-rabies vaccination project.**—*Proc. 53rd Meet. U.S. Live Stk sanit. Ass.*, 1949. pp. 257-263. 703

This is an interim report on the progress of a large-scale field trial of a chick-embryo-propagated vaccine. Altogether, 7000 dogs are to be vaccinated; the report deals with results on the first 422. There were no cases of rabies among the animals and no deaths that could be attributed to the vaccine. One dog had an unexplained temperature on the fourth and fifth days after vaccination. There were no abscesses at the sites of injection and no post-vaccinal paralysis.

In one of four herds of cattle vaccinated, 15 died within 28 days, with atypical symptoms. "Street" virus was recovered. Negri bodies could not be found in the brains of any of the cattle nor in the first series of mice and in only one mouse in the second series. One cow in another herd died of rabies.

In one goat herd, 15 were vaccinated and 120 were not. There were no cases of rabies in either group.—F. B. Leech.

Zebrowski, S. (1949.) Z kazuistyke wścieklizny i szczepień przeciwściekliznowych u psów w latach 1947-1948. [**Rabies and anti-rabies inoculations of dogs in 1947-1948.**]—*Med. weteryn.* **5.** 514-518. [English summary.] 704

During the post-war years, Z. observed an increased incidence of rabies in Poland. In 1947-48, 83 dogs and 3 horses died from rabies. Particular danger lies in dumb rabies. Z. inoculated bitten and suspected dogs with Semple's vaccine. The dose was 40-60 ml. according to size, 3–4 ml. being given subcutaneously daily over a period of days. Among 47 dogs vaccinated only one death was recorded. Use of the vaccine on a large scale is still debatable and should at present be confined to institutions with the necessary facilities and specialists.

—J. R. Mitchell.

Lépine, P. & Croissant, O. (1951.) Microscopie électronique des corps de Negri dans la rage des rues. Méthode de repérage et d'examen des coupes histologiques en microscopie électronique. [**Electron microscopic study of Negri bodies.**]—*Ann. Inst. Pasteur.* **81.** 1-8. 705

A description of the examination by electron microscopy of Negri bodies in rabies-virus inoculated mouse brain.—G. Davies.

Hahn, R. G. (1951.) **A combined yellow fever-smallpox vaccine for cutaneous application.**—*Amer. J. Hyg.* **54.** 50-70. [Author's summary copied *verbatim*.] 706

The preparation of a combined yellow fever-smallpox vaccine for cutaneous administration is described. The yellow fever component is the 17D strain in chick embryo while the vaccinia is in phenolized sheep lymph, both being mixed with gum arabic to a total concentration of the latter of 15%. The mixture is then frozen and dried in a vacuum. The combined product is highly efficient for immunization against both diseases, withstands storage well and may be produced and applied cheaply.

Collier, W. A. (1950.) **Preservability of dry vaccine lymph.**—*Doc. neerl. Ind. Morb. Trop.* **2.** 41-43. [In English. Author's summary slightly modified.] 707

After 18 years of storage Otten's dry lymph gave positive results in 30–85% of babies. A g. pig test showed that two tubes had a titre of 1:250; all others had a titre of 1:1,000 to 1:8,000.

Janiszewski, J. (1950.) Klimatyczne leczenie grypy prosiąt. [**Treatment of swine influenza by removal of affected pigs to warmer quarters.**—*Med. weteryn.* **6.** 357. 708

During an outbreak of swine influenza in a large piggery a number of pigs were removed to calf pens. After a few weeks a large proportion of the pigs removed to the calf pens recovered, whereas there was an increasing mortality rate among those left in the piggery.

J. speaks of the condition as a "cement disease".—John R. Mitchell.

I. Edney, M. & Isaacs, A. (1950.) **Interference between inactive and active influenza viruses in the chick embryo. III. Inhibitor of virus haemagglutination in the chorio-allantoic membrane.**—*Aust. J. exp. Biol. med. Sci.* **28.** 603-612. [Authors' summary copied *verbatim*.] 709

II. Isaacs, A. & Edney, M. (1950.) **Interference between inactive and active influenza viruses in the chick embryo. IV. The early stages of virus multiplication and interference.**—*Ibid.* 635-645. [Authors' summary copied *verbatim*.] 710

I. Some properties of the inhibitor of haemagglutination by influenza viruses found in suspensions of ground chorioallantoic membranes have been described.

Membrane inhibitor is heat-stable, has

greater inhibitory activity against heated than unheated viruses, and is destroyed by the *V. cholerae* enzyme, RDE [receptor-destroying-enzyme]. In the intact membrane, part of the inhibitor is inaccessible to the action of RDE and is probably intracellular. Membrane inhibitor and allantoic fluid inhibitor differ from one another in the order of their inhibitor gradients.

Influenza viruses act enzymically on membrane inhibitor both *in vitro* after normal membrane has been ground and *in vivo* during growth of the viruses in the developing chick embryo.

During interference, when production of virus haemagglutinin is prevented, no reduction in inhibitor can be demonstrated.

II. Influenza virus injected into the allantoic sac was in large part absorbed by the chorio-allantoic membrane, but less than 1% of the inoculum, as measured by infectivity and haemagglutinin tests, was recovered from ground suspensions of the chorio-allantoic membranes following treatment with RDE. The recovery of virus was reduced a further ten-fold, as measured by infectivity tests, if the membranes were incubated in RDE before grinding, in order to remove superficially adsorbed virus.

Inactive (heated) influenza virus behaved similarly to active virus; the recovery of virus haemagglutinin from chorio-allantoic membrane suspensions was less than 0·1% of the virus absorbed.

Following absorption of active or inactive virus by the chorio-allantoic membrane there was no evidence that membrane suspensions showed any viral enzymic activity, antibody-combining power, antigenicity in mice as regards production of specific antihaemagglutinin, or ability to interfere with the propagation of active virus. The interference process did not inhibit the "disappearance" of active virus in the chorio-allantoic membrane.

HILLEMAN, M. R., BUESCHER, E. L. & SMADEL, J. E. (1951.) **Preparation of dried antigen and antiserum for the agglutination-inhibition test for virus influenza.**—*Publ. Hlth Rep., Wash.* **66.** 1195-1203. [Authors' summary slightly modified.] 711

A method for preparing dried antigens and control antisera for the agglutination-inhibition test for viral influenza has been described. Both manifold- and chamber-type drying equipment are satisfactory for this purpose. The haemagglutinating antigens show no more than twofold reduction in titre on desiccation. Properly dried antigens are stable for at least 25 months when stored at 4°C. and for at least 51 days at 37°C. Antigens with moisture values as high as 0·80% can usually be heated at 56°C. for four days or at 60°C. for two days without significant loss in titre while preparations with 0·88% or greater moisture content are completely inactivated under these conditions. Dried rooster control antisera are stable for at least two years when stored at 4°C.

OKUBO, K., SATO, K. & ICHIKAWA, Y. (1948.) **Study on equine encephalomyelitis epizootica.** —*Jap. med. J.* **1.** 126-132. [Abst. from abst. in *Bull. Inst. Pasteur.* **47.** 613. (1949.)] 712

An account of unconcluded investigations on an outbreak of encephalitis in horses in Northern China in 1945. Three strains of virus were isolated from eight horses. Histological changes in the central nervous system are described. The general picture of the disease was similar to that in an outbreak of epizootic encephalitis in Northern Chinese horses in 1940. —C.M.S.

HURST, E. W. (1950.) **Some observations on the pathogenesis of Eastern equine encephalomyelitis and louping-ill in young and old animals, with special reference to routes of entry of the viruses into the nervous system.** —*J. comp. Path.* **60.** 237-262. 713

The viruses of Eastern equine encephalomyelitis and of louping-ill did not spread in mice by way of the peripheral nerves as a rule, but apparently *via* the blood stream and/or the nasal mucosa and olfactory apparatus. The transit of virus from blood to brain should be regarded perhaps in terms of "growth through" the wall of the vessel rather than "permeability".—CLIVE BRIGGS.

REAGAN, R. L., LILLIE, M. G., HAUSER, J. E., POELMA, L. J. & BRUECKNER, A. L. (1948.) **A preliminary report on the propagation of the virus of equine infectious anemia (swamp fever) in rabbits.**—*Proc. U.S. Livestock sanit. Ass.* 52*nd Ann. Meeting.* pp. 37-44. [Authors' summary slightly modified.] 714

Equine infectious anaemia (swamp fever) virus has been passed in young rabbits of mongrel stock through eight serial passages using infected citrated rabbits' blood as transfer material. Citrated rabbits' blood of the third serial passage produced a chronic form of disease in a horse, characterized by intermittent periods of high temperature, similar to the conditions noted in chronic infectious anaemia.

VERGE, J., LUCAS, A., GAUGHY, L., ANDRAL, L & PARAF, A. (1951.) L'avortement à ultra-

virus des équidés existe-t-il en France? [**Virus abortion in mares in France.**]—*C.R. Acad. Sci., Paris.* **233.** 453-454. **715**

The authors record the recognition in France of virus abortion in mares similar to that described in the U.S.A., Europe and S. Africa by other workers [Dimock & Edwards (*V.B.* **7.** page 318); Miessner & Harms (*V.B.* **8.** p. 716); Manninger & Csontos (*V.B.* **12.** p. 150); Henning (*V.B.* **17.** abst. 791)]. *Salmonella abortus-equi* is frequently present as a secondary organism in this condition just as *S. cholerae-suis* is frequently concerned in swine fever, the primary cause of which is the virus of swine fever.

In the outbreak reported in the present paper 15 of 16 mares aborted within the period 8th Dec. 1950–18th March 1951. The abortions occurred without any premonitory symptoms. After abortion the mares soon came into heat and on being served became pregnant. Inclusion bodies were present in the liver, spleen and lungs of the aborted foals. Bacteriological examination of aborted foetuses gave negative results. Abortion was produced by experimental inoculation of a pregnant mare with tissue emulsion prepared from an aborted foal and filtered through a Chamberland L.3. filter. Abortion occurred one month after inoculation.

—M.C.

Hansen, H. J. & Holst, S. J. (1950.) Fall av virusabort hos sto i Sverige. [**Virus abortion in mares in Sweden.**]—*Nord. Vet.-Med.* **2.** 131-159. [English and German summaries. Abst. from English summary.] **716**

Virus abortion had not hitherto been described in Scandinavia. An account is given of an outbreak in 1948 after the arrival of a young mare which had respiratory catarrh and raised temperature. Other mares and 15 colts then developed catarrh, loss of appetite and swelling of the hind legs. Twelve out of 21 pregnant mares aborted during the winter. A table in English shows the date of the abortions and the result of subsequent matings.

Eleven of the foetuses and two full-term colts that died 24 hours after birth were examined P.M. In the later cases there were cellular reactions in the necrotic foci in the liver, more regular and numerous inclusions in the lungs and more intensive and extensive changes in the adrenal cortex than in earlier cases. The virus is said to be acidophil, its effect epitheliotropic perhaps also endotheliotropic. The resemblance to canine contagious hepatitis (Rubarth) was noted; the P.M. pictures of virus abortion and equine influenza were compared.

It was concluded that virus abortion has been present in Sweden since 1928 and is identical with that described in Europe and America, although clinical observations tended to show a connection with equine influenza.

—K. Slavin.

Anon. (1951.) La sensibilité du buffle domestique au virus de la peste bovine augmente du Proche-Orient à l'Extrême-Orient. [**The susceptibility of Asiatic buffaloes to rinderpest.**]—*Bull. Off. internat. Epiz.* **36.** 20-72. [English summary.] **717**

The susceptibility to rinderpest of buffaloes increases from the Near to the Far East. Research on immunization is of the utmost importance as the buffalo is indispensable for the cultivation of rice. Lapinized virus has given more encouraging results than goat virus or egg virus, but rabbits are difficult to breed in hot countries. Inactivated vaccines have been prepared and are also effective. Asiatic pigs are susceptible to rinderpest.

—A. Mayr-Harting.

Anon. (1949.) L'éradication de la peste bovine au Siam. [**Eradication of rinderpest in Thailand.**]—*Bull. Off. internat. Epiz.* **31.** 138-148. **718**

An interesting account of the first stages of the campaign to eradicate rinderpest from Thailand. Although the south of the country bordering on Malaya has been free for many years, persistence of the disease in the central rice plain and in the important breeding areas of the north and north-east has necessitated the expenditure each year of much effort in its control and considerable annual wastage of buffaloes so essential for the production of rice. Thailand is an important rice-exporting country.

Starting on a line in the south, staff tackled the outbreaks methodically by quarantine and immunization and gradually moved north fanning out into the east and finally into the north-east. In spite of many setbacks good progress was made.

[Since this report was written, rinderpest has been eradicated from Thailand, the last cases occurring in December 1949. In view of the many difficulties encountered great credit is due to those responsible for planning and executing this campaign.]—J. R. Hudson.

Delpy, L. P. (1951.) La peste bovine en Iran. Suppression de l'épizootie de 1949 et recherches immunologiques. [**The eradication of the 1949 epidemic of rinderpest in**

Persia.]—*Bull. Off. internat. Epiz.* **36.** 83-95. [English summary.] 719

This epizootic was brought under control by the veterinary organization of the Ministry of Agriculture. Two weeks after the disease had been recognized they started vaccinating free of charge and within a year 300,000 animals, almost the total livestock of the area, had been immunized. Formolized vaccine with saponin was used; this was considered by D. to be preferable, in the circumstances which obtained in Persia, to any of the living vaccines. The need for international exchange of information on outbreaks is stressed.

—A. MAYR-HARTING.

NAKAMURA, J. (1951.) Recherches sur l'épreuve de fixation du complément dans la peste bovine au Japon. [**Japanese studies of the complement-fixation test in rinderpest.**]—*Bull. Off. internat. Epiz.* **36.** 96-107. [Abst. from author's English abst.] 720

In the complement-fixation test saline extracts of lymph nodes of infected calves are used as an antigen. To avoid non-specific reactions rabbit sera must be heated. Sera of cattle, when heated, often lose their reactivity; for these a method has been evolved whereby the titre of the complement-fixing antibodies is compared with extracts from infected and from normal lymph nodes. The results were satisfactory for the diagnosis and for testing immunity. Unexplained failures of the method were also, however, observed.

—A. MAYR-HARTING.

I. WATSON, H. C. (1950.) **Immunisation against rinderpest by lapinised virus.**—*Vet. Rec.* **62.** 519. 721

II. WATSON, H. C. (1951.) **Immunisation against rinderpest with lapinised virus.** [Correspondence.]—*Ibid.* **63.** 370. 722

I. Lapinized virus was used to immunize cattle imported to Hong Kong from Great Britain. It was found that rinderpest antiserum was not necessary to control the vaccination reaction which was very mild.

II. Four Ayrshire cattle vaccinated with lapinized virus a year previously on importation to Hong Kong from Great Britain were challenged with live rinderpest virus. Apart from slight temperature reaction no signs of illness were seen.—D. LUKE.

HUDSON, J. R. (1951.) L'utilisation des différents vaccins contre la peste bovine. [**The value of a number of rinderpest vaccines.**]—*Bull. Off. internat. Epiz.* **36.** 73-82. [English summary.] 723

The advantages and disadvantages of various kinds of rinderpest vaccines are discussed; the choice of a vaccine is greatly influenced by the circumstances under which it is to be used. There is therefore no "best" rinderpest vaccine.—A. MAYR-HARTING.

DAUBNEY, R. (1951.) Peste bovine. Notes sur les vaccinations par virus vivants. [**The use of living vaccines in control of rinderpest.**]—*Bull. Off. internat. Epiz.* **36.** 116-128. [English summary.] 724

D. objects to the use of inactivated vaccines where the disease is enzootic, as they produce only short-lived immunity. Living goat virus vaccine has done good service in Egypt and mortality caused by the vaccine has been only 0·14%. Lapinized virus is too variable in yield and virulence. Virus adapted to the yolk sac of chick embryos can be finely adjusted and D. suggests the preparation from it of vaccines suited to various degrees of sensitivity.—A. MAYR-HARTING.

RACHAD, A. M. (1951.) La peste bovine en Egypte. [**Rinderpest in Egypt.**]—*Bull. Off. internat. Epiz.* **36.** 129-139. [English summary.] 725

R. advocates formolized vaccine, alone or with immune serum. According to his observations in Egypt living vaccine is dangerous and causes a high mortality. The results reported by Daubney [see preceding abst.] should be viewed against the fact that before his arrival about 500,000 animals had been immunized with formolized vaccine. [It is not clear whether these animals were subsequently vaccinated with the goat virus and figure in the results quoted by Daubney.]

—A. MAYR-HARTING.

DELPY, L. P. (1950.) Sur le contrôle de l'innocuité et de l'efficacité des vaccins antipestiques. [**Standardization of rinderpest inactivated vaccines.**]—*Bull. Off. int. Epiz.* **33.** 184-188. 726

Research on various vaccines in Iran has led to the conclusion that no hard and fast standardized procedure can be laid down for all countries.—G. V. LAUGIER.

YORK, C. J. (1951.) **A new member of the psittacosis-lymphogranulomata group of viruses** (*Miyagawanella bovis*) **that causes inapparent infection in calves.**—*Thesis. Cornell.* pp. 34. 727

Y. describes a new virus obtained from portions of intestines, and faeces of many calves in the vicinity of Ithaca, N.Y. It produces elementary bodies. Antigenically, morphologically, and in staining properties, it resembles

closely members of the psittacosis-lymphogranuloma group. The name *Miyagawanella bovis* is suggested. No apparent symptoms were present in either experimental animals or in those harbouring the virus under natural conditions.—H. L. Gilman.

York, C. J. & Baker, J. A. (1951.) **A new nember of the psittacosis-lymphogranuloma group of viruses that causes infection in calves.**—*J. exp. Med.* 93. 587-603. [Authors' summary copied *verbatim.*] 728

From portions of intestine and feces of apparently normal calves, a virus that produces elementary bodies was procured in guinea pigs and in embryonated eggs. Morphologically and tinctorially this virus closely resembled members of the psittacosis-lymphogranuloma group of viruses and it shared a common antigen or antigens with them. Comparison of serological, pathogenic, and other properties indicated that this virus from calves is a new member of the psittacosis-lymphogranuloma group and in keeping with classification practices it is provisionally named *Miyagawanella bovis.*

Miyagawanella bovis when fed to experimental calves established an infection in the intestinal tract that resembled the inapparent infection seen in natural cases but failed to produce evident disease. Ability of the virus to infect experimental animals by feeding, and its presence in feces of infected animals indicate its natural mode of spread. This method of dissemination and persistence of virus for long periods of time in infected animals suggested the virus should be widespread and more than 60% of the calves in the vicinity of Ithaca were found to be infected.

Hedstrom, H. & Isaksson, A. (1951.) **Epizootic enteritis in cattle in Sweden.**—*Cornell Vet.* 41. 251-253. [Authors' summary copied *verbatim.*] 729

The authors describe an outbreak of epizootic enteritis in cattle in Sweden during the period from 1946 to 1948. Diarrhoea and a long-lasting decrease in milk secretion were the predominant symptoms. The mortality rate was very low. The disease was seemingly due to a virus. It has occurred previously in a mild form in restricted areas of the country.

Dickinson, L. & Inkley, G. W. (1951.) **Use of a sheep abortion virus as a test virus for chemotherapy work.** [Correspondence.]—*Nature, Lond.* 168. 37. 730

The psittacosis-like virus isolated from ovine abortions by Stamp *et al.* [*V.B.* 21. 813] has been used in an *in ovo* screening test of antibiotics and chemotherapeutic substances. The substance under test is introduced into the yolk sac of a chick embryo ten days old; 0·2 ml. of a broth suspension of the virus is inoculated on the chorio-allantoic membrane within four hours, and lesions on the membrane are assessed after a further seven days' incubation.

The authors conclude that the virus is particularly suitable for this type of work.

—G. B. S. Heath.

Majdan, S. (1949.) Skutecność szczepionki z fioletem krystalicznym przeciw pomorowi świń w odniesieniu do wirusu występującego w Polsce. [**Efficacy of crystal violet vaccine against swine fever in Poland.**]—*Ann. Univ. M. Curie-Skłod.* Sect. DD. 4. pp. 155-171. [French summary.] 731

M. found that the vaccine prepared in the U.S.A. immunizes pigs against natural infection but provides no protection against subcutaneous infection with the virus common among pigs in Poland. Intradermal injection of vaccine made from "Polish virus" in doses of 1 ml. appears to be as effective as subcutaneous injection of 5 ml. Technically, intradermal injection requires a greater degree of skill. The vaccine prepared from Polish virus possesses less antigenic properties than American virus. The value of vaccination with Polish virus is that it gives no reaction after inoculation; no losses due to secondary complications have been recorded.—J. R. Mitchell.

Verge, J. (1950.) La méningo-encéphalomyélite du porc, maladie de Teschen, maladie de Techin. [**Porcine encephalomyelitis.**]—*Encyclopéd. vét. période.* No. 11-12. pp. 366-380. 732

An up-to-date and fairly comprehensive survey of the present state of our knowledge of Teschen disease, which pays particular attention to aetiology, symptomatology and prophylaxis. For dealing with the disease on a territorial basis, eradication by slaughter is advocated as the method of choice, but a number of killed vaccines are now available, of which the most promising seems to be the formol crystal violet vaccine of Hruska.

Attention is drawn to reports of experimental infection of the g. pig and embryonated egg.—J. T. Done.

Brion, A. & Bertrand, M. (1946.) Première observation clinique de leucopénie infectieuse du chat. [**Infectious leucopenia in cats.**]—*Bull. Acad. vét. Fr.* 19. 22-26. 733

The authors describe the clinical features of a case of infectious leucopenia in a six-

month-old cat, and how the disease was distinguished from feline distemper and infectious gastro-enteritis. (All three diseases are known clinically as "feline typhus" in France.) The diagnosis was confirmed by means of a blood count before death, and P.M. by the lesions and by passage.—I. W. JENNINGS.

MOULDER, J. W. & WEISS, E. (1951.) **Purification and properties of the agent of feline pneumonitis.**—*J. infect. Dis.* **88.** 56-67. 734

A method involving three cycles of high and low speed centrifugation is described for the purification of the agent of feline pneumonitis, from the yolk sac of chick embryos. The final virus suspension retained about 5% of the original infectivity.—CLIVE BRIGGS.

MANDEL, B. (1951.) **Studies on the relationship between the Theiler group of viruses and the intestinal tract of the mouse.**—*Bull. N.Y. Acad. Med.* **27.** 583-585. [Author's summary modified.] 735

M. isolated from adult mouse intestinal tissue a substance which specifically inhibits the GD VII strain of Theiler's virus. Presumptive evidence was obtained that the inhibitor is a polysaccharide. The amount of inhibitor that can be demonstrated in the intestine of infant mice is considerably less than that in the adult tissue. Mouse intestine appears to be more susceptible than the central nervous system to the TO virus when tested by parallel titrations in Theiler-free mice.

MORNET, P., ORUE, J., BACHIR, S. & KOKE, I. (1950.) La peste aviaire (variété maladie de Newcastle) en Afrique Occidentale Française. **[Newcastle disease in French West Africa.]**—*Bull. Serv. Elev. Industr. anim. A.O.F.* **3.** 7-18. 736

The authors record the appearance of Newcastle disease in French West Africa in 1950. The symptoms are described and differential diagnosis discussed.—D. LUKE.

DE MOULIN, F. (1951.) Pathologisch-histologisch onderzoek van pseudo-pest bij kippen in Nederland. **[Histological research on Newcastle disease in the Netherlands.]**—*Tijdschr. Diergeneesk.* **76.** 389-407. 737

Spontaneous and experimental cases of Newcastle disease were examined. Encephalitis and polyneuritis were seen. Degeneration of ganglia was noticed. Perivascular infiltration was never observed. As a rule atelectasis was the only abnormality in the lungs. The heart muscle was infiltrated by monocytes. Arteritis and hyperplasia of the endothelium of the blood vessels were seen. Apart from petechiae in the proventriculus and a slight hyperaemia of the intestines the digestive tract was normal. The spleen was anaemic without haemorrhages or necrosis. Foci of monocytes were seen in the spleen pulp.

The thyroid was atrophic, the para-thyroids were normal. There were changes in the histological structure of the pituitary gland (decrease of chromophilic cells, loss of granulation of the acidophilic cells, vacuolization of the basophilic gonadotrophic cells). Lesions were also seen in the adrenal glands (vacuolization, destruction of nuclei, destruction of cells, oedema).

According to the author the clinical symptoms are all of nervous and secondarily of endocrine origin. The lung symptoms are caused by disturbed innervation, the decrease in egg production by degeneration of the pituitary gland, etc. Unhindered histamine resorption (from dysfunction of the liver caused by the adrenal glands) is considered to be the cause of the multiple haemorrhages.

The author does not believe there are enterotropic and pneumotropic strains.

—C. A. VAN DORSSEN.

TEKLIŃSKA, M. (1951.) Szczepienia przez nakłucie kur szczepionką indyjską. **[Intradermal immunization against Newcastle disease with killed virus.]**—*Med. weteryn.* **7.** 13-15. [English and Russian summaries.] 738

The vaccine described, consisting of chorio-allantoic fluid from infected chick-embryos diluted with 50% glycerin, was used intradermally. Good results claimed suggest superiority of the intradermal method particularly in field work.—J. R. MITCHELL.

FABRICANT, J. & LEVINE, P. P. (1951.) **The persistence of infectious bronchitis virus in eggs and tracheal exudates of infected chickens.**—*Cornell Vet.* **41.** 240-246. [Authors' summary copied *verbatim*.] 739

Twenty-one Single Comb White Leghorn pullets and two males were divided and housed in two units of an isolation building and inoculated with infectious bronchitis virus. The yolks of eggs laid during the outbreak and after the symptoms had ceased were examined for the presence of virus every day. Swabs of the tracheas were taken from half the birds in each pen every week and were pooled. Attempts at virus isolation from these pools were made.

Virus was first detected in the yolks of eggs two days after inoculation of the birds. The last successful virus isolation was from eggs laid 43 days after infection of the birds.

Infectious bronchitis was isolated from

tracheal swabs beginning with the first week after inoculation of the birds. The last successful virus isolation was obtained four weeks after the birds were infected. Succeeding attempts to isolate virus 5, 6, 7, 8, and 12 weeks after infection failed.

LUCAM, F. & BOUCHER, H. (1951.) L'agglutinine anti-Gallus du sérum humain dans les pneumonies atypiques à virus. [**Agglutination of human serum in atypical virus pneumonia.**]—*C.R. Acad. Sci., Paris.* **233.** 329-330. 740

Agglutinin in the serum of human beings for fowl corpuscles exists only in persons with atypical primary pneumonia. It differs from cold agglutinins. Its characteristics resemble those of agglutinin T.—W. R. BETT.

MONTEMAGNO, F. (1949.) Existencia de la rickettsiosis conjunctival en los ruminantes de Guatemala. [*Rickettsia conjunctivae* **infection in cattle in Guatemala.**] Guatemala: Min. Agric. Boletin No. 3. [English, French, German and Italian summaries.] 741

M. described a typical outbreak of rickettsial conjunctivitis in cattle in Guatemala. No treatment was necessary as the infection cleared up of itself, with or without complictions, but relapses occurred up to three or four times, at intervals of one or two months, each attack lessening in severity. The course of the disease was generally benign, but in some cases there were severe complications, including keratectasia, and complete evacuation of the eyeball. Cases, generally benign, were also seen in goats.—I. W. JENNINGS.

CLARK, W. H., ROMER, M. S., HOLMES, M. A., WELSH, H. H., LENNETTE, E. H. & ABINANTI, F. R. (1951.) **Q fever in California. VIII. An epidemic of Q fever in a small rural community in Northern California.**—*Amer. J. Hyg.* **54.** 25-34. 742

Source of infection not traced. Sheep in the area, but not cattle, were found to be infected.

WOLBACH, S. B. (1950.) **Rickettsiae and rickettsial diseases of man: a survey.**—*Arch Path.* **50.** 612-622. 743

Wherever man, rodents, and ectoparasites common to both coexist, rickettsial diseases occur. Murine typhus is world wide, as are rats, but it is commonest in warm climates. Q fever, originally discovered in Australia, has been found in the U.S.A., Great Britain, Switerland, Roumania, Greece, Italy, and Panama. Characterization of the rickettsial diseases of man was easy before Q fever and rickettsialpox were added to the list. Patients with these two diseases do not give the Weil-Felix reaction. Q fever is without a rash. W.'s own work on spotted fever, beginning in 1915, is discussed. The rickettsia of typhus and *R. prowazeki* are inseparable and the same. Rocky Mountain spotted fever and epidemic typhus can be exactly reproduced in animals. Their distinctive pathological findings are enumerated. The elimination of rickettsial diseases in nature presents insuperable obstacles. The techniques developed in the study of the metabolism of rickettsia and their host cells have opened the way for the study of the pathogenicity of viruses and treatment of the diseases they cause.—W. R. BETT.

GISPEN, R. (1950.) **The rôle of rats and mites in the transmission of epidemic scrub typhus in Batavia.**—*Doc. neerl. Ind. Morb. Trop.* **2.** 23-35. [In English.] 744

In an epidemic of scrub typhus, originating from a strip of alang grass by the Bandjir canal, the rat and mite fauna of the epidemic area were compared with the fauna of a non-epidemic area with alang grass and with other areas without such grass. *Trombicula akamushi* larvae were present in the alang grass of the epidemic district only, and they were found on 10 out of 104 animals examined. *Rattus rattus diardi* and *Pachyura murina* may be the local hosts of the mite. *Schöngastia indica* can be excluded as a vector of epidemic scrub typhus.
—W. R. BETT.

See also absts. **889** (report, Scotland); **891** (report, Hong Kong); **892** (report), Denmark); **895** (report, Sweden); **897-898** (reports, U.S.A.).

IMMUNITY

RAMON, G. (1951.) Les méthodes fondamentales de vaccination. Progrès.—Résultats. [**The fundamental principles of immunization.**]—*Ann. Méd. vét.* **95.** 137-186. 745

This lengthy review, documented by 83 references, discusses the two methods of immunization: the classical modified virus-vaccine methods of Jenner and Pasteur, and the modern anatoxin and avirulent vaccine methods. The utilization of vaccines prepared from living germs, with or without attenuation of virulence, may give rise to phenomena which can vary their action and which the scientist cannot prevent or master. Anatoxins and

avirulent vaccines have enlarged the field of immunity, applied to the prevention of disease in man and in domestic animals.—W. R. Bett.

Coons, A. H. (1951.) **Fluorescent antibodies as histochemical tools.**—*Fed. Proc.* **10.** 558-559. 746

C. described the use of conjugated antibody-fluorescent compounds and the precipitin reaction for tracing the fate of antigenic material, *e.g.* injected foreign proteins and polysaccharides in animal cells and tissues (viewed under the fluorescence microscope). Applications cited are: (1) rate of disappearance of antigens, *e.g.* of crystalline egg albumin in 10 mg. dose in a few hours, of crystalline bovine serum albumin in about two days, of capsular polysaccharides only after weeks or months; (2) location in cells of rickettsia and viruses (mumps, spotted fever, influenza A, infectious canine hepatitis). The source of error due to "non-specific staining" was discussed.

—K. J. Sinclair.

Formaggio, T. G. & Merlo, G. (1949.) Splenectomia e produzione di anticorpi. **[Splenectomy and production of antibodies.]** —*Boll. Ist. sieroter., Milano.* **28.** 32-41. [Abst. from English summary.] 747

The authors studied the production of antibodies in animals splenectomized before and during immunization, the nature and serological activity *in vitro* of the antibodies themselves and their behaviour *in vivo*.

No sigificant variation was observed in the quantitative production of antibodies in animals splenectomized either before or during immunization, in comparison with control animals, nor in the characteristics of the antibodies themselves. No "incomplete" antibodies were observed in the immune sera. The activity *in vivo* of the sera obtained from splenectomized and control animals remained constant.

The authors discuss the site of origin of immune antibodies. Although they could neither confirm nor exclude the hypothesis of the role played by the reticulo-endothelial system, they consider that phagocytosis has considerable importance in the production of antibodies by supplying the substances which act as antigens.

Benassi, G. (1950.) Contributo allo studio dei rapporti tra plasmacellule e produzione di anticorpi. **[Plasma cells and antibody production.]**—*Boll. Ist. sieroter., Milano.* **29.** 258-262. [Abst. from English summary.] 748

B. studied the plasma cell content of the organs of various animals and of calf foetuses in relation to antibody production and to the γ-globulin content of the serum. Although the rate of antibody increase in the serum and that of the plasma cells in the tissues are more or less parallel, the possibility of dissociation should be kept in mind. The presence of plasma cells in the tissues does not necessarily imply the presence of γ-globulin in the serum.

Holstein, M. (1948.) Les sérums précipitants. **[Precipitating sera.]**—*Acta trop.* **5.** 306-326. [In French. English and German summaries. Abst. from English summary.] 749

Different methods of obtaining precipitating sera were tested. Excellent results were obtained within nine days by injecting rabbits with 10 ml. of a solution of 10% glucose in physiological NaCl, two hours before the antigen injection.

The precipitating sera obtained have an elevated titre and a high specificity. These sera were applied within the time of the reaction of the precipitin method which was used for the determination of the blood absorbed by *Pediculus corporis* and *Cimex lectularius*. Human blood can be demonstrated specifically 12 days after the absorption by the former and 36 days after the absorption by the latter.

Beijers, J. A., Van Loghem, J. J. & Van der Hart, M. (1950.) Haemolytische anaemie bij het pasgeboren veulen. **[Haemolytic anaemia of new-born foals.]**—*Tijdschr. Diergeneesk.* **75.** 955-970. [English summary.] 750

Haemoglobinuria was diagnosed in a day old thoroughbred foal. The bilirubin content of the serum was 156 mg. per l.; the mucosae were not icteric. There was a distinct anaemia but the white blood cell picture was little changed. The urine contained no bilirubin. The foal died after four days; it was impossible to perform a P.M. examination. Serological examination proved that the haemolytic anaemia was caused by iso-immunization of the dam by a blood group of the foal that was demonstrated in the blood of the sire and in five other foals sired by the same stallion.

Unheated serum and inactivated serum of the dam agglutinated the red cells of the sire to a titre of 1:16,384 and 1:8,192 respectively. In heated serum incomplete antibodies could be demonstrated with the Coombs' test to a titre of 1:512. With the red cells of the foals the titre varied from 1:128 to 1:1,024. The titre of serum of a negative mare for the erythrocytes of the stallion was 1:4. The titre of the colostrum of the dam was 1:64. By agglutination with horse globulin serum the erythrocytes

of the sick foal proved to be sensitized by incomplete immune antibodies.

The urine of the sick foal agglutinated the red cells of the sire to a titre of 1 : 8; the erythrocytes of the dam were not agglutinated.

—C. A. VAN DORSSEN.

LEMÉTAYER, E., NICOL, L., GIRARD, O., CORVAZIER, R. & CHEYROUX, M. (1951.) Nouvelles recherches sur le passage des antitoxines par la voie digestive. [**Absorption of antitoxins from milk through the digestive tract in foals and calves.**]—*C.R. Soc. Biol., Paris.* **145.** 308-310. **751**

A distinct increase was observed in the antitoxic value of sera from one calf and three foals aged between one and three months, the dams of which had been hyperimmunized against tetanus. It seems, therefore, that unweaned animals can absorb antibodies from the alimentary tract for a longer period than is generally supposed.—J. A. NICHOLSON.

WAKSMAN, B. H. & MORRISON, L. R. (1951.) **Tuberculin type sensitivity to spinal cord antigen in rabbits with isoallergic encephalomyelitis.**—*J. Immunol.* **66.** 421-444. [Authors' summary and conclusions slightly modified.] **752**

In rabbits with experimental isoallergic encephalomyelitis, intracutaneous tests with homologous spinal cord suspended in saline gave reactions having the gross and histologic characteristics of the tuberculin response.

Skin reactivity could not be passively transferred with large amounts of serum, but its development was correlated with the development of experimental disease, both in degree and in time.

Positive corneal reactivity could be demonstrated in approximately one half to one third of the animals developing encephalomyelitis, especially in those surviving longer than 2 weeks.

Titration of inoculation dose and skin test dose was carried out. Skin reactivity remained low and encephalomyelitis failed to appear in animals inoculated with low doses of antigen or tubercle bacilli, in animals inoculated subcutaneously or intraperitoneally, in immature animals, and in animals with cachexia. By using the skin testing method as a means of comparing nervous tissue fractions, antigenic effectiveness was found in a residue insoluble in water and ether and not affected by freezing and thawing in the presence of ether. Proteolipid A of beef brain also gave positive reactions.

Encephalomyelitis could not be produced by the water soluble, dialyzable fraction described by Hottle *et al* [*V.B.* **20.** 911]. This substance was likewise not effective in skin tests.

Dicumarol dosage, sufficient to keep the prothrombin level below 50% of normal, had no effect on incidence of experimental disease.

The experimental data strongly favour the conclusion that the production of experimental isoallergic encephalomyelitis in rabbits by the inoculation of homologous spinal cord combined with killed tubercle bacilli and mineral oil is associated with the development of sensitivity of the tuberculin type, directed at one or more elements of rabbit nervous tissue.

BENNETT, I. L., JR. (1951.) **Comparison of leukocyte changes produced by pyrogens and by anaphylaxis in the guinea pig.**—*Proc. Soc. exp. Biol. N.Y.* **77.** 772-775. [Author's summary and conclusion slightly modified.] **753**

Changes in circulating leucocytes which occur after anaphylaxis were compared with those after pyrogen injection. Following both of these reactions, there was immediate leucopenia followed by polymorphonuclear leucocytosis. Two types of response, although superficially very similar, were distinguishable by direct eosinophile counts which revealed uniform rises with anaphylaxis and uniform falls with the pyrogenic reaction. It was concluded that the leucocyte changes after anaphylaxis are not due to pyrogen contamination.

See also absts. **645-646** (TB.); **657** (fowl cholera vaccine); **668** (*Pasteurella* and *Clostridium* bacterins); **700-702** (F. & M. disease); **703** (chick embryo-propagated rabies vaccine); **704** (rabies); **706** combined yellow fever—smallpox vaccine); **711** (influenza antigen); **720-726** (rinderpest); **731** (swine fever vaccine); **738** (Newcastle disease); **740** (human serum agglutination in virus pneumonia).

PARASITES IN RELATION TO DISEASE [ARTHROPODS]

FIEDLER, O. G. H. & DU TOIT, R. (1951.) **A new biological method for evaluating the efficiency of insecticides for the protection of sheep against blowfly strike.** [Correspondence.]—*Nature, Lond.* **168.** 608-609. **754**

Using first instar larvae of *Lucilia cuprina, in vitro* standards of concentrations of insecticides were determined which were larvicidal in a specified time. These standards were used to determine the concentrations of insecticides and the protection they afforded in treated experimental sheep.—R. A. HUCK.

BARBER, G. W., STARNES, O. & STARNES, E. B. (1948.) **Resistance of house flies to insecti-**

cides.—*Soap & Sanit. Chem.* **24.** No. 11. pp. 120-121 & 143. 755

In a study of the treatment of flies and their progeny through successive generations with various insecticides, all the treated lines had some resistance to each of the insecticides used. The pupae of the treated lines were heavier and more uniform in size than the untreated lines, which suggested that the insecticide killed the weakest and probably the smallest flies.—W. Moore.

Blickle, R. L., Capelle, A. & Morse, W. J. (1948.) **Insecticide resistant houseflies.**—*Soap & Sanit. Chem.* **24.** No. 8. pp. 139, 141 & 149. 756

Whenever widespread use of a powerful insecticide occurs, houseflies develop a resistance. This resistance is not specific to the insecticide used but is extended to other insecticides, for example D.D.T. resistant strains of houseflies were also resistant to chlordane, chlorinated camphene, pyrethrins, thiocyanates and rotenone. Increase in resistance is developed by exposure over long periods and is progressive with each generation, finally resulting in the development of a hardy strain of flies against which normal concentrations of insecticides have little effect.—W. Moore.

West, T. F. [D.Sc., Ph.D. (Lond.), F.R.I.C.], Campbell, G. A. [M.Sc. (Leeds), F.R.I.C.] (1950.) **D.D.T. and newer persistent insecticides.** pp. xiv+632. London: Chapman & Hall, Ltd. 2nd Edit. revised. 50s. 757

The second edition of this book with the additional chapters on benzene hexachloride, chlordane and toxaphene enables those whose work is connected with insecticides to view D.D.T. and the newer persistent insecticides in a better perspective, and to use them with greater effect now that their value and limitations are better understood. The authors have presented their subject in an attractive way and they have expanded particularly their chapters on the early work on D.D.T. in Switzerland, Fleck and Haller's work on the substances which catalytically decompose D.D.T. and the results of research into the toxic effects of these insecticides on birds and mammals. The phenomenal problem of maintaining an up-to-date bibliography has been tackled with industry and skill and this is perhaps one of the most valuable parts of the book to the scientific worker.—M. J. Lethbridge.

Cutkomp, L. K., Hess, A. D. & Keener, G. G. (1950.) **Factors influencing spray and thermal aerosol application by airplane.**—*J. econ. Ent.* **43.** 456-462. 758

Dense liquids and low temperatures result in greater deposits of fluid on the treated surfaces, and effective spraying can be accomplished from a height of 85 feet.

—G. B. S. Heath.

Deschiens, R. (1951.) L'acariase de l'appareil respiratoire chez les primates et chez l'homme. **[Mites of the respiratory tract in monkeys and in man.]**—*Ann. Inst. Pasteur.* **80.** 107-147. 759

The mites responsible for respiratory acariasis in monkeys are species of *Pneumonyssus* and the condition can be established experimentally. An account is given of similar disease in man; the pathogenicity of the mites concerned is uncertain.—Jas. G. O'Sullivan.

See also bsts. **678** (seasonal variation in incidence of *T. vivax* in *G. palpalis*); **681** (*G. palpalis* and *T. brucei*); **696** (*H. aegyptium* transmitting theileriasis); **744** (mites transmitting scrub typhus); **886** (tick bird).

PARASITES IN RELATION TO DISEASE [HELMINTHS]

Arvy, L. (1949.) Particularités de l'évolution nucléolaire au cours de l'ovogenèse chez Limnaea stagnalis. **[Nucleolar evolution during ovogenesis in *Limnaea stagnalis*.]**—*C.R. Acad. Sci., Paris.* **228.** 1983-1985. 760

Thymonucleic acid in the nucleoplasm in process of ovogenesis decreased as the nucleolus increased in size. Pyrenophilic vesicles, rich in protein, and containing tyrosine and alkaline phosphatase were formed by the nucleolus. The vesicles then migrated towards the nuclear membrane.—Jas. G. O'Sullivan.

Deschiens, R. & Bablet, J. (1948.) Sur deux cas d'enclavement appendiculaire d'anneaux de cestodes. **[Two cases of acute appendicitis caused by cestode segments.]**—*Acta trop.* **5.** 219-227. [In French. English and German summaries. Abst. from English summary.] 761

An account of the finding of proglottides of *T. saginata* as the cause of appendicitis in two human beings.

Rappaport, I. & Wells, H. S. (1951.) **Studies in trichinosis. I. Immunity to reinfection in mice following a single light infection.**—*J. infect. Dis.* **88.** 248-253. [Authors' summary modified.] 762

Experiments are presented which demonstrate various manifestations of immunity in experimental trichinosis. Mice were infected

with 100 larvae, and given a single re-infection with 800 larvae after 10 days, 36 days or 3·5 months, or with 300 larvae after 35 days.

Adult worm counts during the course of the intestinal phase did not show significant differences between re-infected and control animals when the number of larvae fed was 800, a dose which is just sublethal. When mice were re-infected with 300 larvae 35 days after the initial infection, there was a loss of adult worms beginning early in the second week of re-infection.

Adult male and female worms were significantly shorter in length in re-infected animals. The uteri of these female worms appeared sparsely filled with eggs and embryos.

The larval phase in the musculature for the 800 larvae infections indicated the lowest immunity after 10 days and the highest after 36 days. The most striking manifestations of immunity were obtained in re-infections after 35 days with 300 larvae.

It is believed that the low larval yield in the musculature, in spite of high adult worm yields, results mainly from the stunted growth and diminished fecundity of female worms in intestines of re-infected mice.

The least significant manifestations of immunity were obtained with a duplicate series re-infected after 3·5 months with 800 larvae. The reason for these atypical findings is not known. These and other atypical findings such as consistently poor adult yields in previously uninfected animals indicate that the degree of infectivity of larvae may vary from one experiment to the next.

The utilization of several quantitative criteria in the study of immunity in trichinosis is emphasized and may explain the conflicting results of other workers.

Koch, S. O. (1949.) Ormeknuder i tarmene hos kvaeg, (*Strongylosus nodularis intestini*). **[Strongyle nodules in the intestines of slaughter cattle.**—*Maanedsskr. Dyrlaeg.* **60.** 321-342. [English summary.] 763

An account of the examination at the Aarhus abattoir, Denmark, of the intestines from 1,166 cattle. Nodules which K. attributed to worm parasites were present in the small intestine, particularly in the terminal portion, of 26%. He speaks of "Anchylostomum bovis" as being notably present in the lesions.—P. Schambye.

Gibson, T. E. (1949.) **The action of phenothiazine on pure infestations of** *Trichostrongylus axei* **in sheep.**—*Brit. Vet. J.* **105.** 309-312. 764

G. infected each of 15 cross-bred Down sheep, 12–17 months old, with 6,000 infective larvae of *T. axei* daily for 25 days. After four weeks each sheep was dosed with either 5, 10, 15, 20, 25, 40 or 50 g. phenothiazine. Both the treated and control animals were slaughtered a week later and the worm burden in the abomasum of each was estimated. Doses of 20–30 g. phenothiazine gave 87–98% elimination of the infestation, but a dose of at least 40 g. was required for complete elimination.

—M. J. Lethbridge.

Crofton, H. D. & Thomas, R. J. (1951.) **A new species of** *Nematodirus* **in sheep.** [Correspondence.]—*Nature, Lond.* **168.** 559. 765

The authors described *Nematodirus battus* n.sp. from lambs. The main distinguishing feature is the finely pointed tail of the female.

—M. L. Clarke.

McGaughey, C. A. (1951.) **Necrotising encephalomyelitis of goats in Ceylon (encephalomalacia of goats, goat paralysis). A note on the occurrence of nematode larvae in the brain and spinal cord.**—*Brit. vet. J.* **107.** 449-451. 766

Stimulated by Innes' studies of the pathology of "lumbar paralysis" in goats [*V.B.* 22. 472] the author examined the brain, spinal cord and cerebrospinal fluid of two goats in Ceylon. Parts of the brains and cords were examined by fixation and the cutting of sections for microscopic study, the remainder being minced, suspended in broth, filtered and centrifuged and samples of the deposit examined microscopically. One incomplete nematode larva was found in the deposit from the minced tissues of one goat. In the other goat one complete and three incomplete larvae were found in the white matter of the cerebrum. Further cases are to be examined.—M.C.

Bush, D. L. (1951.) **Lumbar paralysis of ovine species in Japan reportedly caused by** *Setaria digitata.*—*J. Amer. vet. med. Ass.* **118.** 388-394. 767

Lumbar paralysis affecting goats, sheep and horses commonly occurs in Korea and in Japan and has been studied for many years by Japanese research workers. The condition occurs particularly in imported animals and is seasonal. The Japanese workers consider that it is caused by damage done to the spinal cord and brain by larval forms of the nematode *Setaria digitata* (Filariidae). A similar condition has been described in Ceylon in imported goats. The pathology of the Ceylon condition has been studied by Innes [*V.B.* 22. 472] and he has compared his material with Japanese

material. Innes describes the lesions as disseminated foci of necrotizing encephalomalacia. In the focal lesions nematode larvae have been found by the Japanese workers and also recently by McGaughey in Ceylon material [see preceding abst.]

B. studied the condition in Japan and states that "A time element of two months was set in which to work on the problem". During this time he made clinical observations; bred mosquitoes (*Aedes togoi*); fed mosquitoes infected with *S. digitata* on sheep; described the P.M. findings on natural cases; injected blood containing microfilariae into sheep; studied the blood chemistry and faecal samples; analysed food stuffs; conducted chemotherapeutic studies; made a histopathological study of bone, brain and spinal cord; attempted to set up the disease experimentally by inoculation of tissue emulsions and cultures of *Erysipelothrix rhusiopathiae*, streptococci and viruses [undesignated].

As a result of these studies B. rejects the Japanese hypothesis that *S. digitata* is the cause of the disease and suggests that it may be due to faulty nutrition particularly in respect of phosphorus and calcium, but he also considers that it has some resemblance to scrapie. Scrapie, he states, is a disease of unknown causation connected with inbreeding, pampering by stabling the animals and poor feeding. [Scrapie is an infective disease caused by a virus (see V.B. 21. 2283 and 3228)]. In a footnote he also states that cobalt-deficiency exists and that cobalt supplements are beneficial.

[As B.'s work was completed in such a short time some reserve is indicated before accepting his conclusions and rejecting the work of the Japanese investigators and that of Innes.]

—M.C.

SPONTANEOUS AND TRANSMISSIBLE NEOPLASMS AND LEUCAEMIAS [INCLUDING FOWL PARALYSIS]

Julian, L. M. (1947.) **The pathology of the prostate gland of man and the dog: a review.** —*Cornell Vet.* **37.** 241-253. 768

In this useful review, after a short note on the normal structure of the gland, an account is given of the three main pathological processes which involve the prostate of man and dog—benign hyperplasia, prostatitis, and neoplasia. There appear to be two types of hyperplasia of the gland in the dog: one type can be produced experimentally by oestrogenic stimulation and may, for example, accompany "feminizing" testicular tumours, while the other type, which is the more common "cystic hyperplasia", is probably due to excessive androgenic stimulation. Prostatitis is said to be common in both man and dog, while true neoplastic changes are rarely seen in the dog, when they generally take the form of adenocarcinoma.

—E. Cotchin.

Goldie, H. & Felix, M. D. (1951.) **Growth characteristics of free tumor cells transferred serially in the peritoneal fluid of the mouse.** —*Cancer Res.* **11.** 73-80. [Abst. from authors' summary.] 769

Requisite numbers of Sarcoma 37 or malignant lymphoma cells, obtained either from subcutaneous implants or by serial transfers in the peritoneal fluid, were inoculated intraperitoneally into several groups of CFW or dba mice. The rate and the amount of cell growth in each mouse were studied quantitatively. Specimens of peritoneal fluid were withdrawn repeatedly, at various time intervals, from the same mouse, for total and differential cell counts (number of tumor cells per 0·1 cubic centimeter, percentages of mitoses, of necrotic elements, and of leukocytes). The differences in growth characteristics of free lymphoma cells and S-37 free cells in the peritoneal fluid would appear to be attributable to the essential difference between the "strain specific" quality of lymphoma cells for dba mice and the "foreign" nature of S-37 cells for CFW mice.

Coman, D. R., DeLong, R. P. & McCutcheon, M. (1951.) **Studies on the mechanisms of metastasis. The distribution of tumors in various organs in relation to the distribution of arterial emboli.**—*Cancer Res.* **11.** 648-651. 770

In experiments in which either fixed and stained or living Brown-Pearce tumour cells were injected into the left heart of rabbits, there was found to be a close correspondence between the number of stained cells lodged in capillaries and the development of tumours. There was also a good agreement between the order of involvement of organs by stained cells and their involvement by metastases in spontaneous cases.—E. Cotchin.

Carson, J. R. (1951.) **Exposure to disease agents of strains of chickens differing in resistance to leucosis.**—*Poult. Sci.* **30.** 213-230. 771

After submitting strains of White Leghorns of known resistance and susceptibility respectively to avian leucosis (fowl paralysis) to a variety of disease producing agents, *viz.* tumour cell grafts, viruses, bacteria and *Eimeria tenella*, C. concluded that resistance to the disease was not indicative of any over-all resistance to other diseases.—D. Luke.

See also absts. 727-728 (psittacosis-lymphogranuloma group).

NUTRITIONAL AND METABOLIC DISORDERS

Coates, M. E., Dickinson, C. D., Harrison, G. F., Kon, S. K., Cummins, S. H. & Cuthbertson, W. F. J. (1951.) **Mode of action of antibiotics in stimulating growth of chicks.** [Correspondence.]—*Nature, Lond.* **168.** 332. 772

An observed effect of procaine penicillin, given with standard chick rearing diets, in stimulating growth, was attributed to a suppression of growth of some deleterious organisms or possibly to an effect upon the alimentary microflora calculated to promote the synthesis of any vitamins that may be lacking in the diet.

—R. Marshall.

Stieglitz, C. R. von. (1951.) **Investigation of plant and animal nutrition problems on Springbrook Plateau.**—*Qd. agric. J.* **73.** 41-50. 773

Pica, low milk production and infertility in dairy cattle grazing on paspalum [? *Paspalum dilatatum*] and kikuyu grass [*Pennisetum clandestinum*] pastures on the Springbrook plateau of Queensland were associated with hypophosphataemia and sub-optimal serum calcium levels. The provision of a bone meal supplement effectively cured the condition and pastures were appreciably improved by top-dressing with lime or dolomite plus superphosphate.—R. L. Reid.

Gray, F. V. & Pilgrim, A. F. (1950.) **Fermentation in the rumen of the sheep.** [Correspondence.]—*Nature, Lond.* **166.** 478. 774

When wheaten and lucerne hay, inoculated with rumen micro-organisms were fermented *in vitro* the breakdown of various carbohydrates and amounts of methane formed were similar to those observed *in vivo*. Differences in the fatty acid mixtures were presumably caused by different rates of absorption. This was confirmed by analysis of the rumen mixture at intervals after feeding each of the two fodders.

—P. H. Herbert.

Colby, R. W. & Frye, C. M. (1951.) **Effect of feeding high levels of protein and calcium in rat rations on magnesium deficiency syndrome.**—*Amer. J. Physiol.* **166.** 408–412. [Authors' summary copied *verbatim*.] 775

The feeding of high levels of protein to rats caused a marked growth depression over those fed normal protein rations. The deletion of magnesium from these rations caused a marked growth depression, increased mortality and the development of magnesium deficiency symptoms. The high level of protein increased the severity of the magnesium deficiency syndrome.

The addition of high calcium levels to the normal protein ration increased the severity of the magnesium deficiency, but a combination of high protein and high calcium was very little more severe than either alone.

Cartwright, G. E., Hamilton, L. D., Gubler, C. J., Fellows, N. M., Ashenbrucker & Wintrobe, M. M. (1951.) **The anemia of infection. XIII. Studies on experimentally produced acute hypoferremia in dogs and the relationship of the adrenal cortex to hypoferremia.**—*J. clin. Invest.* **30.** 161-173. [Authors' summary copied *verbatim*.] 776

It has been shown that a variety of agents other than bacterial and sterile turpentine abscesses produce acute hypoferremia in dogs. These include histamine, epinephrine, fracture, anaphylactic shock and mild stress. The injection of adrenocortical extract and adrenocorticotrophic hormone prduced a similar hypoferremia. Adrenalectomy abolished the hypoferremia produced by mild stress and by ACTH; the hypoferremia-producing effect of epinephrine was significantly reduced in the adrenalectomized dog but was not abolished. Intravenously administered saccharated oxide of iron disappeared rapidly from the plasma of intact dogs given ACTH and more slowly from the plasma of adrenalectomized dogs. The administration of colloidal thorium dioxide also resulted in a decreased rate of disappearance of injected iron.

The intravenous injection of dibenamine [dibenzyl-β-chloroethylamine] failed to block the hypoferremia-producing effect of epinephrine and itself produced a hyperferremia maximal in two hours and a hypoferremia which began in eight hours and was maximal at 24 hours.

When the various agents were employed, a correlation was observed between the degree

of lymphopenia and eosinopenia produced and the degree of hypoferremia which developed.

SCHAPIRA, G., DREYFUS, J.-C. & KRUH, J. (1950.) Métabolisme différent de deux hémoglobines chez un même animal adulte étudié à l'aide du fer radioactif. **[Different metabolism of two types of haemoglobin from one animal studied with the aid of radioactive iron.]**—*C.R. Acad. Sci., Paris.* **230.** 1618-1620. 777

A study of the regeneration of hb. rendered radio-active with Fe^{59} indicated that there were significant differences between the specific activity of hb. from normal rabbits having less than 40% denatured hb. and that from rabbits rendered anaemic by bleeding. It is concluded that in the adult there are at least two types of hb. which renew their iron at different rates so that at least two types of red blood corpuscles probably exist.

—J. A. NICHOLSON.

DUNLOP, G. (1951.) **Prevention of swayback symptoms in lambs by administration of copper sulphate to the pregnant ewe.**—*Nature, Lond.* **168.** 728-729. 778

Treatment of 4,000 ewes at a dose rate of 1 g. copper sulphate dissolved in 30 ml. of water per ewe, some within one week of lambing and others immediately swayback was observed in the lamb crop, eliminated the development of swayback in the progeny.—R. A. HUCK.

DEAN, G. (1949.) **Disseminated sclerosis in South Africa. Its relationship to swayback disease and suggested treatment.**—*Brit. med. J.* May 14th. 842-845. 779

Disseminated sclerosis is rare in South Africa. A few cases have been found among the white population and none among the native and coloured peoples. Swayback is rare and is confined to three small areas: copper is an effective prophylactic. It is suggested that, in view of the possible relationship between the two diseases, copper therapy of established human cases should be tried: this suggestion seems to be made because copper therapy is claimed to have been successful in affected lambs. The hypothesis is put forward that a high copper level may protect the animal against a hypothetical infective agent which causes the disease.—E. G. WHITE.

COHN, E. W. & D'AMOUR, F. E. (1951.) **Effects of high altitude and cobalt on growth and polycythemia in rats.**—*Amer. J. Physiol.* **166.** 394-399. [Authors' summary copied *verbatim.*] 780

Temporary residence at 14,150 feet (Mt. Evans), Colorado, retards growth. At this altitude there is a marked polycythemia. The oral administration of cobalt salts causes a more marked decrease in growth than in control animals at 5,300 feet, 10,700 feet and 14,150 feet; and a more marked polycythemia in the cobalt-fed animals at the three locations. The most pronounced increase in red blood cells and hemoglobin was noted in the animals maintained at the highest (14,150 foot) elevation.

An altitude of 10,700 feet (Echo Lake) did not affect the growth rate but caused a polycythemia in control animals. The oral administration of cobalt salts causes a decrease in growth and a more marked polycythemia than in control animals.

The food consumption/100 gm. of body weight/day of cobalt-fed animals is less than that of control animals. The effect of high altitude and cobalt administration on growth and polycythemia is additive. Polycythemia due to altitude may not parallel a retardation in growth rate.

POCHIN, E. E. (1950.) **Investigation of thyroid function and disease with radioactive iodine.**—*Lancet.* **259.** 41-46; 84-91. 781

P. appraised the values and limitations of the older chemical methods of studying iodine metabolism and thyroid function, compared with newer techniques, using radio-active iodine. The circulation and distribution of radio-active iodine in persons with normal and pathological thyroid function was discussed, with special reference to the original work of P. *et al.* The use of radio-active iodine in the diagnosis of thyroid disease and in the treatment of iodine-concentrating tumours was discussed.

—P. H. HERBERT.

ZETTERSTRÖM, R. & ENGFELDT, B. (1951.) **Renewal of bone phosphate in experimental hyperparathyroidism.** [Correspondence.]—*Nature, Lond.* **168.** 81-82. 782

Using radio-active phosphate it has been found that large doses of parathormone in the rat delay the renewal of inorganic salts in bone and that their resorption from new and old bone is proportional.—JOHN SEAMER.

UNDERWOOD, E., FISCH, S. & HODGE, H. C. (1951.) **Metabolism of calcium in normal, rachitic and vitamin D-treated rats as evidenced by radiocalcium Ca^{45} studies.**—*Amer. J. Physiol.* **166.** 387-393. [Authors' summary slightly modified.] 783

In agreement with the current theory, the authors favour the view that vitamin D (*a*) in rachitic rats increases the absorption of calcium

from the gastro-intestinal tract, (*b*) aids in mobilizing inorganic phosphorus from organic sources and (*c*) locally accelerates the mineralization of bone. Active healing of rachitic bone, as shown by the upswing in the curve of deposition of Ca^{45}, begins between the 48th and 72nd hour after the administration of the vitamin.

Von Marek, J., Wellmann, O. & Urbányi, L. (1949.) Zusammenfassende Darstellung des Wesens der Rhachitis und verwandter Knochenerkrankungen im Lichte neuzeitlicher Forschungen. **[Rickets and similar bone diseases in the light of modern research.]**—*Acta vet. hung.* **1.** 47-61. [In German.] 784

The type of biochemical research which tends to analyse the nutritional requirements of a species in terms of skeletal chemistry (with due regard for the intrinsic factors assisting in the maintenance of this state) has considerably advanced knowledge of the aetiology and pathology of rickets and other bone diseases in the osteo-dystrophy group. The authors discuss these advances. It is mainly a biochemical discussion directed toward a pathological end. Brief reference is made to therapeutics. Of the 49 references quoted, 30 refer to the previous work of these authors.—C. W. Ottaway.

Mellanby, E. (1949.) **The rickets-producing and anti-calcifying action of phytate.**—*J. Physiol.* **109.** 488-533. 785

Cereal phytate exerted an anti-calcifying action in the growing dog. Its action depended not on direct antagonization of vitamin D, but on the fact that it competed in the intestine with its structural analogue, inorganic phosphate, for calcium, thus limiting the amount of calcium available for absorption under the influence of vitamin D. A diet high in phytate necessitated not only an adequate vitamin D intake, but also a high consumption of calcium.
—N. Dean.

Bendixen, H. C. (1950.) Einige Beobachtungen über Schäden, die durch A-vitaminarmes Futter bei Schweinen hervorgerufen werden. **[Disturbances in pigs caused by food lacking vitamin A.]**—*Dtsch. tierärztl. Wschr.* **57.** 150-155. 786

Depletion of stores of vitamin A of sows before mating and maintenance upon a diet deficient in vitamin A for as much as 30 days during pregnancy caused anophthalmia and microphthalmia in the new-born piglets.
—R. Marshall.

Keane, K. W., Nakamura, F. I. & Morris, M. L. (1947.) **Vitamin A plasma levels of dogs.**—*N. Amer. Vet.* **28.** 587-590. 787

In 42 dogs of various breeds and ages the vitamin A content per 100 ml. of plasma ranged from 150–2280 i.u., with an average of 609 i.u. In 52% of the animals the values were between 300 and 600 i.u. In only 11·9% were the values over 900 i.u. Since complete dietary histories were not available, no direct correlation between diet and plasma vitamin A could be made, but there were indications that the vitamin A level was higher immediately after a meal.
—E. M. Cruickshank.

Pearson, P. B. & Schmidt, H. (1948.) **Pantothenic acid studies with the horse.**—*J. Anim. Sci.* **7.** 78-83. 788

Shetland ponies, aged about nine months initially, were studied for experimental periods of six months to more than one year. The rate of weight gain and the level of urinary pantothenic acid excretion while the animals were maintained on fixed intakes suggested that 38 μg. of the vitamin (the lowest experimental intake) per kg. body weight per day was adequate for normal health and growth. When the intake was increased there was a greater excretion in the urine, the observed values ranging from 13% of the intake at 38 μg. per kg. per day to 41% at 150 μg. per kg. per day.
—P. H. Herbert.

Burns, M. M. & McKibbin, J. M. (1951.) **The lipotropic effect of vitamin B_{12} in the dog.**—*J. Nutrit.* **44.** 487-499. [Authors' summary copied *verbatim.*] 789

A deficiency of vitamin B_{12} is reported in weanling puppies fed on a synthetic diet containing 19% purified casein and 9% fat. The deficiency varied in severity with different litters of animals and was evident in growth impairment, abnormalities of liver function and, in several instances, gross fatty infiltration of the liver. Administration of either vitamin B_{12} or choline produced significant improvement in liver function in 4 dogs receiving the basal diet. Two dogs receiving a choline-deficient diet were cured of their fatty livers with vitamin B_{12} alone. These findings suggest that the dog's requirement for methylating substances, like that of the rat and chick, is dependent upon the vitamin B_{12} content of the ration.

Hoover, S. R., Jasewicz, L. B. & Porges, N. (1951.) **Vitamin B_{12} in activated sewage sludge.**—*Science.* **114.** 213. 790

Wet and dried activated sludge from a municipal sewage treatment plant was found chromatographically to contain significant amounts of vitamin B_{12}.—G. Davies.

MANTOVANI, M. (1949.) Della miodegenerazione cerea dei vitelli da ipoavitaminosi C; cenni vitaminologici ed ipotesi sul meccanismo patogenetico. [**Waxy muscular degeneration in calves caused by vitamin C deficiency.**]—*Riv. Medi. Vet. Zootec., Parma.* **1.** 193-201. 791

M. discussed vitamin C and the pathological state of muscle in cases of vitamin C deficiency.

Five hypotheses are given in regard to possible changes which may occur. (1) Vitamin C may take part in the oxidation of lactic acid. Deficiency would consequently favour accumulation of lactic acid. (2) M. considers that vitamin C might favour the release of oxygen from haemoglobin: lack of this vitamin would thus prevent complete oxidation of lactic acid. (3) The absence of the synergistic action of vitamin C on insulin, as well as of the direct action on glucose, might result in excess glucose being present, a condition which indirectly favours the accumulation of lactic acid. (4) The absence of the synergistic action of vitamin C on corticosterone might cause accumulation of toxic products. (5) The antagonism between vitamin C and thyroxin was discussed and the action of adrenalin was considered.—G. G. EVANS.

CLAYTON, B. E. & PRUNTY, F. T. G. (1951.) **Relation of adrenal cortical function to scurvy in guinea-pigs. Preliminary experiments.**—*Brit. med. J.* Oct. 20th. 927-930. [Authors' summary copied *verbatim.*] 792

Guinea-pigs placed on a scorbutic diet showed a gradual well-marked increase of varying extent in urinary 17-ketosteroid excretion. This reached a peak in the terminal phases.

Daily administration of A.C.T.H. and cortisone failed to influence the fall in body weight and subsequent death of the animals on a scorbutic diet. Such animals showed similar manifestations of scurvy as untreated scorbutic controls.

SEEKLES, L. (1950.) **Liver function and ketosis in cattle. A contribution to the problem of "conditioned intoxication" and "conditioned deficiency".**—*Acta Physiol. Pharmacol. Neerl.* **1.** pp. 369-524. [In English.] 793

Ketosis in cattle was successfully treated with glucose given *per os* or subcutaneously, or by oral administration of ammonium lactate (200 g. per day for six days). The use of arsenic, choline methylene blue or insufflation of the udder was sometimes successful. Restoration of lowered glycogen content of the liver was the basis of treatment.—R. MARSHALL.

ROSENBERGER, G. (1950.) Kohlanämie und puerperale Hämoglobinurie des Rindes. [**Kale anaemia and puerperal haemoglobinuria of cattle.**]—*Dtsch. tierärztl. Wschr.* **57.** 330-332. 794

Anaemia caused by feeding excess kale (*Brassica oleracea*) cannot be distinguished from puerperal haemoglobinuria, particularly if the condition arises 1–3 weeks after calving. High producing cows in good condition are chiefly affected.—J. A. NICHOLSON.

HVIDSTEN, H., WESTGAARD, P. & BREIREM, K. (1950.) Foring og sunnhetstilstand i en del fjøs på Østlandet vinteren 1948-1949. [**Feeding and health in some herds in Eastern Norway during the winter 1948-49.**]—*Tidsskrift for Det norske Landbruk.* **57.** 129-157. [English summary.] 795

Loss of appetite and of weight, stiffness and unhealthiness and sometimes tetany and ketosis were observed in dairy cattle in E. Norway during the winter of 1948-49; there was also a high degree of infertility in heifers and cows. An early spring and a heavy rainfall reduced the nutritive value and palatability of hay and silage and the foodstuffs had a high fibre content and low digestibility; dry matter was 25–30% subnormal. It is uncertain whether underfeeding or lowered bacterial activity in the foodstuffs was responsible for the condition, which appeared only in dairy cows and not in young cattle.—F. R. HARRIS.

GWATKIN, R. & PLUMMER, P. J. G. (1948.) **Mortality in young pigs. III. The effect of deficient diets in successive generations.**—*Canad. J. comp. Med.* **12.** 82-89 & 116-118. 796

Three gilts, the second generation on grain diets, were used to start this particular project. The litter of one of these gilts were all dead in two weeks. The two remaining gilts, one of which received oil while the other did not, each raised a litter of pigs. Two gilts from the oil-fed litter were continued on the same diet (oats, NaCl, Ca and feeding oil) but neither conceived. Two gilts from the litter fed the basic diet without oil lost their first two litters. Following the addition of oil to the diet of one of these latter two gilts and tankage to that of the other, both raised the majority of their third litters. There was evidence of progressive depletion in successive generations. Fourth generation shut-in pigs attained market weight at six months on a diet of grain, tankage, NaCl and Ca. The most consistent lesions in the young pigs that died were glomerulo-tubular

nephritis, a type of nutritional hepatitis, oedema and fragmentation of the myocardium.

—J. L. Byrne.

Whitehair, C. K., Heidebrecht, A. A. & Ross, O. B. (1951.) **Antibiotics for digestive disturbances in young pigs.**—*Vet. Med.* **46.** 81-83. 797

The administration of penicillin, streptomycin or aureomycin, either in the food or by individual dosage had a beneficial effect on weaned pigs with apparently non-specific alimentary disturbances.—J. T. Done.

Liegeois, F. & Derivaux, J. (1949.) Hyperparathyroïdie d'origine alimentaire. [**Increase in the weight of the parathyroid glands resulting from a food constituent.**]—*C.R. Soc. Biol. Paris.* **143.** 128-129. 798

Excessive phosphorus in the diet of pigs gave rise to increase in the weight of parathyroid tissue (calculated relative to the live weight of the animal) with resultant increase of phosphate in the urine.—R. Marshall.

Cicardo, V. H., Cappellino, A. A. & del Conte, E. (1951.) **Inhibition of the hypophysis of the guinea pig by ultra-sound waves.** [Correspondence.]—*Nature, Lond.* **168.** 169-170. 799

In g. pigs subjected to treatment with ultra-sonic waves defective growth, loss of equilibrium, ulceration, loss of hair, and bone changes occurred. This is a good method for obtaining pituitary insufficiency in these animals, and is perhaps applicable to larger ones.

—F. R. Harris.

See also absts. **803** (riboflavin and ophthalmia in horses); **857** (self-selection of diet by pregnant ewes); **879** (effect of climate and terrain on nutrition of grazing ruminants); **880** (climate and nutrition of pigs); **883** (effect of oestrogens on metabolism of cattle).

DISEASES, GENERAL

Harrell, G. T., Jr., Aikawa, J. K. & Winston-Salem, N. C. (1951.) **Alterations in the permeability of membranes during infections.**—*J. Amer. med. Ass.* **147.** 232-238. [Authors' summary slightly modified.] 800

The permeability of membranes is altered during the course of acute infections. Oedema develops during the acute phases, associated with an increase in extravascular fluid (thiocyanate space), and disappears with recovery. The alterations may occur within minutes to hours (meningococcaemia), within hours to days (pneumococcus pneumonia) or within days to weeks (trichinosis or rickettsial spotted fever). The alterations in permeability which occur during immune reactions in the absence of infection (serum sickness) resemble the changes seen during an acute infectious disease. The observations are interpreted as indicating an alteration in the permeability of the capillary wall, permitting the progressive loss of crytalloids (water, ions, and glucose), colliods (albumin and other proteins), and red blood cells as the clinical severity of the disease increases. These changes are often associated with alteration in the blood volume and offer an explanation of the mechanism by which peripheral circulatory failure develops. The permeability of cell membranes is probably also altered whether the cells are directly parasitized or not. The alterations during arsenic intoxication, which are reversible by therapy with British anti-lewisite (B.A.L.) offer a clue as to the possible intracellular mechanism through interference with enzyme groups. The therapeutic possibilities are discussed, with emphasis on the correct use of crystalloids and proteins and the possible application of antihistamines and hormones in conjunction with specific chemotherapeutic agents in treatment. The early changes are due to toxaemic products of the infecting organism; the later changes may result from tumoral or cellular immune reactions. The alterations in permeability are qualitatively similar, whether produced by bacterial infection (meningococcaemia), an extracellular infection due to a nematode (trichinosis), or intracellular infection caused by rickettsiae (Rocky Mountain spotted fever), or an immune reaction in the absence of infection (serum sickness).

Corticelli, B. (1950.) Fibrillazione e flutter atriali nel cavallo. (Rassegna bibliografica ed osservazioni personali). [**Atrial fibrillation and atrial flutter in the equine heart.**]—*Arch. vet. Ital.* **1.** 117-196. [English, French, German and Spanish summaries. Abst. from English summary.] 801

Atrial fibrillation is one of the various disturbances in cardiac function in horses resulting from infectious diseases and other causes. Atrial flutter, or impure atrial fibrillation, is unknown. An electrocardiogram always facilitates the diagnosis of atrial fibrillation. The prognosis is favourable if the disturbance can be attributed to slow fibrillation.

The administration of digitalis, but not quinidine is recommended.

—Anita M. Mandl.

DIMOCK, W. W. (1950.) **Incoordination of horses: wobbles.**—*Bull. Ky agric. Exp. Sta.* No. 553. pp. 36. [Author's conclusions copied *verbatim.*] **802**

When the clinical features, the pathology, and the various examinations and tests made for evidence of injury and infection are summarized, it leaves two over-all possible causes of wobbles that might well receive further consideration, namely, nutrition and a genetic basis for the disease.

On the supposition of a nutritional cause, systematic experimental treatment, nutritional and medicinal, could well be undertaken as a part of the study.

On the hypothesis that young Equidae may inherit a tendency to the disease, an up-to-date record of the breeding of all colts developing this disease should be kept, and the blood relation of the sire and dam of every case should be studied. Inasmuch as wobbles is a disease of horses of all kinds and breeds, it must be expected that cases will occur that seem to exclude a genetic basis. On the other hand, for the registered breeds, where ancestry can be traced back for many generations, it may be quite possible to find where the blood lines meet that would tend to introduce and establish the genetic factor and to intensify the occurrence of the disease. [This condition appears to have considerable similarity to the disease known as "kumri" in parts of India, Burma, Malaya, etc. The Japanese workers in Korea and Japan have reported that a "lumbar paralysis" of goats, horses and sheep is caused by damage done to the spinal cord and/or brain by the migrations of *Setaria digitata* and INNES has suggested the possibility that the old theory that kumri in India was caused by filarial worms may prove to be correct. It would be useful to compare the pathology of the spinal cord and brain of cases of "wobbles" with that of the goats, horses and sheep in Japan and of kumri in horses in India (*V.B.* **22.** 472 and 766).—Ed. *V.B.*]

ANON. (1951.) **Riboflavin and ophthalmia in horses.**—*Nutr. Rev.* **9.** 15-17. **803**

Recent reports from T. C. Jones and his colleagues in U.S.A. on the relation of riboflavin to the incidence of periodic ophthalmia in horses were discussed. In a study of large numbers of army horses it was found that a supplement of 50 mg. riboflavin daily prevented the occurrence of the lesions. Dosing with riboflavin did not, however, cure established lesions. No clear cut correlation was established between riboflavin content of feed and the incidence of periodic ophthalmia. In attempts to induce ophthalmia on a ration of low riboflavin content, vascularizing keratitis was observed but not periodic ophthalmia.—A. M. COPPING.

MESSIERI, A. (1949.) Sulle cosidette pseudopericarditi dei bovini. **[So-called pseudopericarditis in cattle.]**—*Atti Soc. ital. Sci. vet.* **3.** pp. 404-410. [English and French summaries.] **804**

A note on a suppurative condition involving the omentum and tissues of related organs, with thrombosis of the vena cava, diagnosis during life having been foreign body pericarditis. There was no foreign body and the cause of the condition was not found.

—L. BADIALI.

NONDO, S. D. (1950.) **Biscoli disease in cattle.**—*Uganda Vet. Bull.* No. 4. pp. 17-18. [Mimeographed.] **805**

The condition occurs in Luganda and is characterised by general malaise and vesicular lesions on the tongue. The cause is unknown.

—E. J. H. FORD.

HARS, E. (1951.) Maladie de l'oedème du porc en France. **[Oedema disease of pigs in France.]**—*Bull. Acad. vét. Fr.* **24.** 341-343. **806**

A review of the findings of various workers on the aetiology and treatment of the condition, with observations by the author on symptomatology and morbid anatomy.

—J. T. DONE.

SASSENHOFF, I. (1950.) Eine neuartige enzootisch auftretende Luftröhrenentzündung bei Hühnern. **[A new enzootic tracheitis of fowls.]**—*Berl. Münch. tierärztl. Wschr.* No. 10. pp. 224-226. **807**

A disease of fowls is described which has occurred in Bavaria since January 1950. It is an acute benign laryngotracheitis, severe dyspnoea being the most marked clinical manifestation. The mucous membrane of the larynx and of the upper part of the trachea is swollen and congested, but there is little mucus and there are no fibrinous membranes. The symptoms cease spontaneously after a few days. Bacteriological examination and attempts to isolate a virus by inoculation into chick embryos have yielded negative results. Experimental transmission of the disease has also failed. Yet the spread of the disease from fowl to fowl, and from farm to farm, and its course in the individual bird, point strongly to its being an infectious disease.

—A. MAYR-HARTING.

POISONS AND POISONING

ALLCROFT, R. (1951.) **Lead poisoning in cattle and sheep.**—*Vet. Rec.* **63.** 583-590. **808**

Lead poisoning in these animals is unlikely to be of the chronic type observed in man but is nearly always acute being caused by the ingestion of paint containing lead. The level of lead in the blood rose rapidly after ingestion of the metal but took a considerable time to return to normal. The greater part of lead ingested was excreted in the faeces. P.M. findings indicated that lead concentration was highest in kidney cortex and was somewhat elevated in liver and kidney medulla. Cumulative lead poisoning was observed in cattle and sheep given lead in the drinking water in experimental conditions. For diagnosis, 40 p.p.m. or more (on wet tissue) of lead in the kidney cortex, and 20 p.p.m. in the liver, were taken as indicating that death was the result of lead poisoning.—R. MARSHALL.

ROEMMELE, O. (1950.) Das Problem der Bleivergiftung bei Mensch und Tier. [**Lead poisoning in man and animals.**]—*Tierärztl. Umsch.* **5.** 109-114. **809**

R. discussed the manner in which lead acts as a poison; the symptoms and resulting pathology; the results of experimental lead poisoning; and diagnosis and therapy.

—R. MARSHALL.

ENGLISH, J. A. (1951.) **The effect of distillers' solubles containing fluorine on the development of dental enamel in swine's teeth.**—*Science.* **113.** 678-680. **810**

Pigs 26–29½ weeks old had been fed high quality rations, one type of which included distiller's solubles containing NH_4F,HF, the fluorine content determined as fluoride being 2·4–22·4 p.p.m. Of five pigs given this diet four had abnormalities of the enamel of the developing permanent molars. Two of five pigs not given fluoride had slight defects.

—J. T. DONE.

EMLEN, J. T., JR. & CROW, J. F. (1951.) **A test for increased resistance in a chronically poisoned mouse population.**—*Amer. J. Hyg.* **54.** 71-75. [Authors' summary slightly modified.] **811**

Mice trapped from a building which had been subjected to three years of poisoning with a rodenticide, compound 1080 (sodium fluoracetate), were not significantly more resistant to the poison than was a control group. The median lethal doses (LD_{50}) for the two groups were 16·5 and 13·9 mg. per kg. respectively. Studies in which a radio-active tracer (P^{32}) was used in the poison solution showed that drinking from the poison fountains invariably resulted in death. These two findings indicate that survivors owed their escape to their failure to ingest the poison rather than to greater resistance. Therefore, there was no effective selection for resistance factors.

WANNTORP, H., SWAHN, O. & KYLIN, O. (1951.) Om toxiciteten hos kloramin och hypokloriter för varmblodiga djur. [**Toxicity of chloramine and hypochlorites for warm blooded animals.**]—*Nord. Vet.-Med.* **3.** 459-476. [In Swedish. English and German summaries.] **812**

The toxicity of chloramine and hypochlorites is caused by cell protein denaturation, followed by reactions between the chlorine compound and the amino acids to give aldehydes and nitriles. These reactions increase the toxicity of the chlorine compounds; 100% of rats survived doses of 0·11 g. of chloramine, but 70% were killed by the same dose given with 0·025 g. of glycine. Calcium hypochlorite increased in toxicity when given with glycine to pigs. Accidental occurrence of hypochlorites in feeding stuffs and lime-wash have caused the death of pigs, and human fatalities have been caused in similar ways.

—F. R. HARRIS.

PARKER, W. H. & WILLIAMSON, T. F. (1951.) **Paraffin poisoning in cattle.**—*Vet. Rec.* **63.** 430-432. **813**

Crude petroleum (tractor vaporizing oil) poisoning was observed in three grazing cows, results being fatal in two cases.

Inappetence was a consistent symptom and constipation was pronounced. The occurrence of acetonaemia and hypomagnesaemia was discussed. P.M. degeneration of the liver and kidneys was recorded.

The authors described experiments on two heifers, to discover the effects of varying doses of such oil, given *per os*, the fatal dose being 1 gal. per 4·5 cwt. live weight.—G. DAVIES.

ZADURA, J. (1951.) Zatrucia u świń mączką rybną. [**Poisoning of pigs with fish meal.**]—*Med. weteryn.* **7.** 314-315. **814**

Deaths occurred in pigs fed on fish meal. At P.M. examination, the contents of the alimentary tract were found to contain 1·75% of NaCl considered to be attributable to excessive salt content of the fish meal and to have been responsible for the disease.

—J. R. MITCHELL.

O'Donoghue, J. G. & Wilton, G. S. (1951.) **Algal poisoning in Alberta.**—*Canad. J. comp. Med.* **15.** 193-198. 815

Two cows were affected in one outbreak. One died and one recovered following treatment with both sodium thiosulphate and sodium nitrite solutions intravenously. In the second outbreak, losses were reported in horses, pigs, dogs, fowls, and turkeys. One of five water samples proved toxic for experimental animals. A pig was killed by one quart given *per os*. Five ml. of a Seitz filtrate killed a rabbit by the intraperitoneal route. One rabbit which received 3 ml. intravenously was ill but recovered. G. pigs were not affected. The alga was believed to be one of the *Microcystis* group. Chemical analysis did not reveal any recognizable toxic substances.

—R. Gwatkin.

Salvatore, D. & Giovanni, D. (1951.) Tossicità ed atossicità della *Ferula communis*. [*Ferula communis* **poisoning in sheep in Sardinia.**]—*Zooprofilassi.* **6.** 223-240. [English and French summaries.] 816

The toxic principle resembled that of sweet clover (*Melilotus officinalis*) in lowering the prothrombin level and consequently increasing the blood coagulation time, finally leading to death from haemorrhage.

Curves of prothrombin levels in sheep, determined by Quick's method, and in rabbits by Howell's micro-technique, fed samples of the plant collected from seven districts of Sardinia indicated that toxicity varied considerably with locality and was presumably related to rainfall and soil type.—K. J. Sinclair.

Clapham, P. A. (1950.) **Keratitis in pheasants following treatment with phenothiazine.**—*J. Helminth.* **24.** 61-62. 817

Pigmentation of feathers and leg scales and eye changes including corneal thickening occurred within 36 hours in pheasants which were fed 4% phenothiazine continuously in the daily mash. Birds removed from direct sunlight recovered providing the damage already done was not too serious. After 32 days, eight of 12 birds left outside were almost completely blind. The birds were considered to have been photosensitized by the phenothiazine.—C.M.S.

Wyngaarden, J. B. & Seevers, M. H. (1951.) **The toxic effects of anti-histamine drugs.**—*J. Amer. med. Ass.* **145.** 277-282. [Authors' summary copied *verbatim*.] 818

The common side effects of the antihistamic agents have been tabulated and briefly commented on. Most of them are relatively innocuous and are important merely because they are annoying to patients. However, certain patients do avoid these agents because of the unpleasantness or severity of side effects.

Severe toxicity from these compounds is rare, but serious reactions have resulted from idiosyncracy or from overdosage. Twelve previously unreported cases of toxicity are presented, seven of them convulsive, two of them occurring in adults. Eleven fatal cases are reviewed, in eight of which the patients were children under the age of two years. Two of these cases were previously unreported. Infants and children seem predisposed to development of convulsions from overdoses, and the mortality rate in infants in whom convulsions develop is very high. Adults tend to development of central nervous system depression, which may on occasion be lethal. Agranulocytosis is another serious development, which has been reported nine times with one death.

The treatment of these reactions is purely symptomatic at present. Some suggestions as to therapy, based on successfully treated cases and on experimental observations are offered. It is imperative that physicians be aware of the potential hazard of the antihistaminic compounds, as well as of their great usefulness. Fortunately, reactions thus far have been rare.

See also absts. **890** (report, Australia); **901** (book, plant poisoning).

PHARMACOLOGY AND GENERAL THERAPEUTICS

(For treatment of specific infections see under the appropriate disease)

Guimaraes, J. L. & Lourie, E. M. (1951.) **The inhibition of some pharmacological actions of pentamidine by suramin.**—*Brit. J. Pharmacol.* **6.** 514-530. [Authors' summary copied *verbatim*.] 819

The chance observation that a precipitate is liable to form in mixtures of dilute solutions of suramin and pentamidine raised the question whether the simultaneous presence of these two substances in the body might tend to inhibit the pharmacological effects of either of them. This has been substantiated by showing that a previous injection of suramin (or the presence of suramin) can inhibit the following actions of pentamidine: fall of blood pressure, bronchoconstriction, contraction of gut, "curare-like"

action on the rat phrenic nerve diaphragm preparation, paralysis in frogs and toxicity for mice.

Reasons are given for attributing this inhibitory effect mainly to the formation of an inactive salt complex between the suramin and pentamidine. The salt complex may, of course, be present even when the concentrations of the component substances are outside the range of those necessary for the actual formation of a precipitate.

Some of the pharmacological effects of pentamidine are known to be attributable to histamine release, and we have found that suramin can exercise antihistamine activity under certain conditions. It is possible, therefore, that this antihistamine action contributes towards suramin's inhibitory influence on pentamidine, but reasons are given for believing that it plays a secondary role in some of the examples studied and is negligible in others.

Theoretical considerations make it unlikely that this inhibition of the pharmacological effects of the one drug by the other embraces also an inhibition of chemotherapeutic activity.

TODD, J. W. (1951.) **The onus of proving the value of remedies.**—*Lancet.* **261.** 438-439. [Author's summary and conclusions copied *verbatim.*] **820**

Whereas the onus of proving the value of new drugs is put on their advocates, the opposite attitude is widely adopted towards the "general" remedies. This difference in outlook is wrong, and the advocates, not the opposers, of all remedies should supply proof of their claims.

FAIRBROTHER, R. W., MARTYN, G. & PARKER, L. (1951.) **The laboratory control of antibiotic therapy.**—*Lancet.* **261.** 516-518. [Authors' summary copied *verbatim.*] **821**

A detailed bacteriological study of a variety of infections indicates the necessity for the laboratory control of antibiotic therapy. Most infections encountered in a general hospital may be caused by a wide range of organisms, which show considerable variation in their reaction to the different antibiotics. Treatment based on clinical diagnosis may consequently be of limited value.

NEWTON, G. G. F., ABRAHAM, E. P., FLOREY, H. W., SMITH, N. & ROSS, J. (1951.) **Some observations on the biological properties of bacitracins A, B, and C.**—*Brit. J. Pharmacol.* **6.** 417-429. [Authors' discussion and summary copied *verbatim.*] **822**

The observations recorded in this paper make it reasonably certain that the nephrotoxicity of commercial preparations of bacitracin is due in part at least to the antibacterially active constituents. There is thus little hope of obtaining a preparation of bacitracin which does not have the capacity to damage the kidneys.

For therapeutic purposes it does not appear to be worth trying to separate bacitracin A from bacitracin B, for although the latter is somewhat less toxic than the former, it is less potent against certain bacterial species. The little data so far available suggest that bacitracin C has a greater acute toxicity than the other two bacitracins.

ANON. (1951.) **Penicillin. A review of its properties and veterinary applications.** pp. 28. Manchester: Imperial Chemical (Pharmaceuticals) Ltd. **823**

This booklet gives an account of the properties of penicillin. There are succinct summaries of data on its absorption, distribution and excretion, and indications are given of therapy (infections caused by staphylococci, streptococci, clostridia, *Corynebacterium renale, Erysipelothrix rhusiopathiae, Actinomyces bovis* and *Leptospira canicola*), of dosage and of the treatment of wounds, abscesses, burns, and of its use in prophylactic therapy in surgery, in skin and eye diseases and tetanus in animals. Details are given of the treatment of certain of the more common conditions in each host. A short bibliography is given.

—MALCOLM WOODBINE.

HSU, Y. C. & BUTTLE, G. A. H. (1951.) **The enhancement of the effect of oral penicillin in laboratory animals by the use of oil containing aluminium resinate.**—*Brit. J. Pharmacol.* **6.** 89-100. **824**

The degree of protection against a haemolytic streptococcus and the blood penicillin level were increased in mice dosed *per os* with penicillin in oil containing aluminium resinate. The latter is water repellant. Other laboratory animals and other water repellants were tested with varying results: it was concluded that the use of aluminium resinate aided the absorption of penicillin.—JOHN SEAMER.

CHESTERS, C. G. C. & ROLINSON, G. N. (1951.) **Trace elements and streptomycin production.** —*J. gen. Microbiol.* **5.** 559-565. [Authors' summary copied *verbatim.*] **825**

Using a defined medium capable of purification free from trace elements the relationship between the latter and streptomycin production by *Streptomyces griseus* was investi-

gated. Zinc and copper were essential for antibiotic production in as much as they were essential for growth. In the case of iron, approximately five times as much was required for antibiotic production as for growth alone. It was not possible to demonstrate that manganese was essential for either growth or antibiotic production.

STACEY, M. & WEBB, M. (1947.) **Studies on the antibacterial properties of the bile acids and some compounds derived from cholanic acid.**—*Proc. roy. Soc.* Ser. B. **134.** 523-537. [Abst. from authors' summary.] **826**

No correlation between the bacteriostatic power of the bile acids and derivatives and their relative activities in removing the Gram-positive complex from yeast was observed, but there was a simple relationship between their bacteriostatic activities and their ability to depress the surface tension of the metabolism medium. The latter relationship was only valid for this particular series of compounds of closely related molecular structure.

LORENZO, P. L., SANZ, F. & BERTRÁN, E. C. (1950.) Acciones farmacológicas del "antricide" y acción sobre el aparato respiratorio y circulatorio. **[Pharmacology of antrycide.]** —*An. Fac. Vet. Madrid.* **2.** 144-151. [English, French and German summaries.] **827**

The effects of antrycide on dogs and cats were studied, the animals being maintained under the action of a narcotic. The antrycide administered intravenously in doses of 0·1–0·2 mg. per kg. body weight, produced decrease in blood pressure, depending upon the dose, and there was also hyperpnoea and augmented amplitude. Larger doses had more marked effects. Atropine modified these effects, indicating that the vagus was involved.

—F. R. HARRIS.

JACQUES, J. E. (1951.) **Pantothenic acid in paralytic ileus.**—*Lancet.* **261.** 861-862. [Author's summary slightly modified.] **828**

Pantothenic acid was used in sixteen cases of paralytic ileus and proved most successful.

Its mode of action probably differs materially from that of other drugs used to restore bowel action. Perhaps there is, in a patient with established ileus, or in the post-operative state, a diminished blood-pantothenic acid level. This may be estimated by the method of Pelczar and Porter (1941), who found the normal level to be between 0·030 μg. and 0·1 μg. per ml.

KRUGMAN, S. (1951.) **Air sterilization in an infants' ward. Effect of triethylene glycol vapor and dust-suppressive measures on the respiratory cross infection rate.**—*J. Amer. med. Ass.* **145.** 775-780. [Author's summary modified.] **829**

In comparative tests on two identical infants' wards, one with and the other without triethylene glycol vapour the cross infection rate in the glycol ward was significantly lower than that in the control ward.

In further work dust-suppressive measures were instituted in the test ward in addition to the triethylene glycol vapour, including the daily mopping of floors and the treatment of all linens with T-13 oil emulsion. The cross infection rate in the glycol ward was then slightly higher than that in the control ward.

The value of an air-sterilizing agent for a ward depends on the relative importance of contact versus air-borne infection. In this study contact infection seemed to be responsible for most of the cross infections.

See also absts. **649-650** (TB.); **652** (metritis); **656** (aureomycin in listeriasis); **664** (sensitivity of *Brucella* to aureomyin); **669** (ringworm); **672** (streptomycin against *C. pyogenes* and *Staph. aureus* infections in cattle); **680** (antrypol); **683.** (trypanosomiasis); **687** (trichomoniasis); **688** (coccidiosis of cattle); **695** (theileriasis of cattle); **730** (abortion in sheep); **754-758** (insecticides); **764** (phenothiazine); **772** (antibiotics stimulating growth of chicks); **797** (antibiotics for digestive disturbances in pigs); **817** (keratitis in pheasants following phenothiazine treatment); **818** (toxicity of antihistamine drugs); **902** (book, therapy); **903** (book, pharmacognosy).

PHYSIOLOGY, ANATOMY AND BIOCHEMISTRY

WILSON, L. T. (1951.) **Physical analysis of the fleece of sheep for biological purposes. I. Actual and apparent cross-sectional areas of a staple of fleece wool under lateral compression. II. Estimation of the number and mean diameter of wool fibres from a cast of their cross-section.**—*Aust. J. agric. Res.* **2.** 181-194 & 195-204. [Author's summaries copied *verbatim.*] **830**

WILSON, L. T. & ROBERTS, N. F. (1951.) **Physical analysis of the fleece of sheep for biological purposes. III. A means of measurement of the fibre-length distribution of fleece wool.**—*Aust. J. agric. Res.* **2.** 205-219. [Authors' summary copied *verbatim.*] **831**

I. An investigation has been made of errors associated with calculations of the sum

of the cross-sectional areas of fibres in a staple of wool from the apparent cross-sectional area of the staple when compressed in a slot. The general mechanism of the compression process has been elaborated, and the errors associated with various conditions suggested. The staple size mainly considered was about that coming from one square inch of skin. The range of mean fibre diameter was from 16 to 32 microns.

II. A technique has been developed for making a cast of the cross-section of a bundle of wool fibres under defined packing conditions. By counting the fibre impressions per unit area in representative portions of the cast, both the total number of fibres and the mean diameter can be rapidly calculated within fairly close limits of error.

III. It is suggested that in a staple of Merino wool only the fibres extending from near the base to near the tip should be considered in a number of important biological problems. Equipment has been built by which the straightened length of these fibres can be measured individually, with a considerable saving in time as compared with the usual manual method. Length analyses of a number of samples by mechanical and manual methods are compared. It is shown that these length analyses may be used for analysis of crimp depth, provided a definite crimp form is assumed.

COMBEN, N. (1951.) **Observations on the mode of growth of the hair of the dog.**—*Brit. vet. J.* **107.** 231-235. [Author's summary modified.] **832**

C. discussed briefly the literature concerning the mode of growth of the hair of the domestic animals, and stressed the importance of a better understanding of this phenomenon in the dog. Measurements of the length of hairs of a greyhound at 7-day intervals following shaving are described. The suggestion is made that hair growth in the dog follows a periodicity pattern of alternating phases of rest and activity.

SLIJPER, E. J. (1948.) **On the thickness of the layer of blubber in Antarctic blue and fin whales. I, II and III.**—*Proc. Koninkl. Ned. Akad. Wetensch.* **51.** Nos. 8, 9 & 10. 1033-1316. [In English.] **833**

Measurements of blue and fin whales in the Antarctic revealed that variations in blubber thickness are similar in both species indicating that this depends on the demands made by the general body outline. Blubber thickness is best measured at the dorso-median line just cranially to the dorsal fin or at the ventro-median line cranially to the anus. The difference between the two species is entirely due to size, the oil content of one blue whale being on a level with that of two fin whales. Variations in blubber thickness are seasonal and mainly depend on the food supply, a lean whale being one which has just arrived from northern waters.

—J. A. NICHOLSON.

DUBREUIL, G. & BAUDRIMONT, A. (1950.) Manuel théorique et pratique d'Histologie. **[Manual of theoretical and practical histology.]** pp. 627. Paris: Vigot Frères. 4th Edit. Fr. 3000. **834**

Although emphasis throughout is centred on man, this can be accepted as a book relating histological findings to physiological states and as such is a guide also to morbid anatomy. It follows the usual pattern in that following reference to techniques it reviews the tissues of the body before referring to their arrangement in particular parts or systems. None of the 730 figures are coloured.—C. W. OTTAWAY.

GADDUM, J. H. (1951.) **The metabolism of histamine.**—*Brit. med. J.* Oct. 27th. 987-991. [Author's summary copied *verbatim.*] **835**

Work on antihistamines has emphasized the importance of histamine itself and drawn attention to many gaps in our knowledge. Changes in the total blood histamine are difficult to interpret, as histamine is normally present in the leucocytes, and the available methods do not give a reliable estimate of plasma histamine unless this is much increased above the normal value.

The urine normally contains free histamine and the inactive substance acetylhistamine. The amount of free histamine excreted by man is normally about 20 μg. per 24 hours. This is increased after intravenous injections of histamine and may be increased during allergic attacks. The amount of acetylhistamine can be increased by giving histamine orally. Estimates of this substance are of comparatively little interest at present.

The normal fate of most of the histamine in the body is to be destroyed by the enzyme histaminase, which should retain its original name and not be called diaminoxidase. The discovery that substances which poison histaminase may sensitize tissues to histamine suggests that this enzyme plays a part in the body similar to that of cholinesterase.

In allergy the tissues not only release abnormal amounts of histamine but are also abnormally sensitive to this substance. Both these facts can be explained on the theory that

those tissues which give an allergic response are deficient in histaminase.

ANDERSSON, B. (1951.) Några nyare synpunkter på laktationens fysiologi. **[Physiology of lactation.]**—*Nord. Vet.-Med.* **3.** 327-341. [In Swedish.] **836**

The author discussed the development of the udder and the neuro-hormonal control of milk secretion and ejection. Secretion of milk is continued through the whole day until the intra-mammary pressure is high enough to inhibit it. Intra-mammary injections which raise the pressure to above 70 mm. Hg may damage the alveoli. The higher fat content of milk at the end of milking is caused by the passage of the large fat molecules, facilitated by the reduced pressure. The mode of synthesis of the specific milk constituents and the concentration of others it not well known. Lactose is probably formed from glucose, milk fat from neutral fat, fatty acids, carbohydrates etc., casein from glycoprotein in the blood plasma and casein P from inorganic blood P. The alveoli in a dry cow contain blood plasma-like constituents, globulins and albumins, and it is these which are secreted during the first 5–6 days of lactation till the alveoli come into full casein production.—H. BOYD.

KMENT, A. & HALAMA, A. (1951.) Milchdruckmessungen in der Euterzisterne des Rindes nach Adrenalin- oder Pituglandolzufuhr. **[Milk pressure in the cisterns of the bovine udder after administration of adrenalin and "pituglandol" (a preparation from the posterior lobe of the pituitary gland).]**—*Wien. tierärztl. Mschr.* **38.** 424-436. [English, French and Italian summaries.] **837**

In 43 cows normal milk pressure averaged 20·9 mm. Hg. Intravenous injection of adrenalin decreased the pressure to an average of 20·3 mm. Hg. while "pituglandol" increased the pressure to an average of 34·1 mm. Hg.

—E. WALLICZEK.

LEHNERT, E. (1950.) Die Blutgruppen des Pferdes. **[Blood groups of the horse.]**—*Vet. Arhiv.* **20.** 357-369. [In German. English summary.] **838**

It is pointed out that when natural horse sera are used for the study of isoagglutination, the results are often confusing owing to rouleau formation or even the absence of agglutination. It is claimed, however, that highly group specific sera can be obtained from horses and that, contrary to earlier reports, tests with such sera show that only two main R.B.C. receptors, A and B, are present. These have corresponding iso-agglutinins α and β and each is made up of a number of components; in the case of A, six; and, in the case of B, three. A_1 is the chief receptor but as a rule several A factors are present; B_1 occurs either alone or in combination with B_2 and B_3. The combination B_{1+2} is found in association with A as is also B_2. In addition a recessive factor O occurs as well as three lysinogens and an agglutinogen x. An isohaemagglutinin C occurs in group O blood which has the receptor I.

In general, the blood groups of horses appear as A, B, AB, or O which is strikingly similar to those of man and the inheritance of these groups also appears to be similar.

—J. A. NICHOLSON.

MACFARLANE, J. C. W. & CECIL, G. W. (1951.) **Eosinophil counting: a modification of Pilot's method.**—*Brit. med. J.* Nov. 17th. 1187-1189. [Authors' summary copied *verbatim.*] **839**

Attention is drawn to Pilot's fluid [50 ml. propylene glycol, 40 ml. distilled water, 10 ml. 1% phloxine in water, 1 ml. 10% sodium bicarbonate in water] for the enumeration of eosinophils. Counting is much easier and quicker than with Randolph's fluid [phloxine-methylene-blue stain in propylene glycol], while the disadvantage of Rud's fluid [magdala-red stain in acetone] is also overcome.

A source of error in the use of the fluid is the clumping of leucocytes on standing. This may be eliminated by the addition of heparin to the fluid in the concentration of one unit per millilitre. There is some evidence that this clumping is due to the formation of fibrin within the pipette.

WEISBERGER, A. S., GUYTON, R. A., HEINLE, R. W. & STORAASLI, J. P. (1951.) **The role of the lungs in the removal of transfused lymphocytes.**—*Blood.* **6.** 916-925. [Authors' summary and conclusions copied *verbatim.*] **840**

In rats, the intravascular injection of large numbers of lymphocytes obtained from the lymphatic system fails to increase the number of circulating lymphocytes. This is the result, chiefly, of a specific selective action of the lungs in removing the cells, after either intravenous or intra-arterial injection. The spleen, and perhaps the liver and kidneys also play a part in removing the transfused lymphocytes, but are not as active as the lungs in this respect. These results are similar to those obtained with the transfusion of granulocytes obtained from the peritoneal cavity of rabbits and raise the possibility that the lungs may act as a homeostatic organ in controlling the level of the white blood

count. Under the conditions of this experiment, relatively large doses of ACTH and cortisone had no significant immediate effect on transfused lymphocytes.

These results indicate that inadequate preservation of leukocytes in stored blood does not account for their failure to appear in the circulation after transfusion, and that better preservation will not, in all probability, alter the situation.

BALCH, C. C. (1950.) **Factors affecting the utilization of food by dairy cows. I. The rate of passage of food through the digestive tract.** —*Brit. J. Nutrit.* **4.** 361-388. 841

Feeding experiments were made with five cows to ascertain the rates of passage of hay in various forms, mangolds, and concentrates through the alimentary canal separately and together, a stained marker being used to indicate the rate of passage. Stained hay appeared in the faeces within 12–24 hours. 10% of the amount fed was excreted between then and 70 hours after feeding. By 90 hours a further 80% had been excreted and the residue was completely voided in 7–10 days. The effects of variations in diet were observed; hay given in a completely ground diet took longer to pass than long hay; the more fluid the content of the rumen, the more rapid was the breakdown of crude fibre (determined by use of a rumen fistula) and the passage of ingesta from the omasum onwards was made more rapid by a high water intake.—JOHN SEAMER.

COMLINE, R. S., ROBERTS, H. E. & TITCHEN, D. A. (1951.) **Histological changes in the epithelium of the small intestine during protein absorption in the new-born animal.** [Correspondence.]—*Nature, Lond.* **168.** 84-85. 842

Experimental observations of changes in the intestinal epithelium in calves, which are described, suggested that protein, absorbed without change within the first 24–48 hours after birth, passed through the cells of the epithelium of the small intestine.—G. DAVIES.

GATENBY, J. B. & MOUSSA, T. A. A. (1951.) **The neurone of the human autonomic system and the so-called 'senility pigment'.**—*J. Physiol.* **114.** 252-254. [Authors' summary copied *verbatim*.] 843

The sympathetic neurones of a man of 60 years of age contain an axon group of senility granules. These are considered to originate from the Golgi apparatus, situated in the cell body, and to migrate to the axon hillock region. The senility granules probably contain some form of neurosecretion. Even after paraffin wax embedding, the granules stain densely in Sudan Black B. This dye does not appear to be exclusively a fat stain, as some workers believe.

COLLET, P. & PÈRES, G. (1949.) Sur les variations de la calcémie observées après section du sympathique cervical chez le cheval. Nouveaux résultats et précisions. Effets de la vagotomie. [**Variations in calcaemia of horses after section of the cervical sympathetic nerve.**]—*C.R. Soc. Biol. Paris.* **143.** 1071-1074. 844

Previous observations had indicated that section of the cervical sympathetic trunk in horses is followed by a hypocalcaemia. As there is also widespread vasodilatation after this procedure, the hypocalcaemia might be caused by dilution. In studies of the refractive index of the blood carried out before and after cervical sympathetic section this is not the case. Evidence was also obtained suggesting that vagotomy is followed by a hypercalcaemia. —J. A. NICHOLSON.

BEHRENS, H. & PUDER, H. (1951.) Der Cholesteringehalt im Liquor cerebrospinalis gesunder Pferde. [**Cholesterol content of the cerebrospinal fluid of healthy horses.**]—*Mh. Vet.-med.* **6.** 355-357. 845

The following were the mean amounts of cholesterol in the cerebrospinal fluid: for four foals, 0·55 mg. % ± 0·03 mg. %; for 44 horses over three years old, 0·45 mg. % ± 0·07 mg. % (range 0·25–0·65 mg. %). Analysis on a sex basis yielded the following: in stallions 0·53 mg. % ± 0·02 mg. %; in geldings 0·42 mg. % ± 0·11 mg. %; in mares 0·50 mg. % ± 0·10 mg. %. Out of five stallions tested three were in the foal age group. Analysis on a nutrition basis yielded:—(a) high plane, 0·49 mg. % ± 0·11 mg. %; (b) medium plane, 0·47 mg. % ± 0·09 mg. %; (c) low plane, 0·27 mg. % ± 0·02 mg. %. Cholesterol value therefore decreased with age and largely depended on the plane of nutrition.—K. J. SINCLAIR.

SIMPSON, M. E., ASLING, C. W. & EVANS, H. M. (1950.) **Some endocrine influences on skeletal growth and differentiation.**—*Yale J. Biol. Med.* **23.** 1-27. 846

The effects on the rat skeleton of hypophysectomy, thyroidectomy, adrenalectomy; hypophysectomy-thymectomy or gonadectomy and injection of hormones were studied. Whilst thyroxin affected maturation by accelerating closure of epiphyseal plates, pituitary growth hormone increased the size of the bone.

—R. N. SMITH.

MAQSOOD, M. (1950.) **Effects of hypo- and mild hyper-thyroidism on fleece-growth in sheep.** [Correspondence.]—*Nature, Lond.* **166.** 647. 847

Eight male Suffolk lambs were divided into three groups on the basis of body weight at the age of 4–4½ months. One group received daily supplements of iodinated casein, the thyroid glands being removed from the lambs of one group or else the lambs were given daily doses of thiouracil, the third group being left untreated. During the following nine months, all the lambs were kept under identical conditions. Mild hyperthyroidism caused an increase, while hypothyroidism caused a decrease in the fibre length; diameter of the fibres was unaffected.—G. B. S. HEATH.

BORGMAN, R. F. & REINEKE, E. P. (1949.) **The response of English Bulldog puppies to thyroidal stimulation.**—*J. Amer. vet. med. Ass.* **115.** 480-486. 848

To determine the response of English Bulldog puppies to mild hyperthyroidism, a control group of four dogs, two of either sex, and a test group containing two males and one female were used.

Protamone [thyroprotein] at a dose rate of 4 g. per 100 lb. of dry matter consumed, started at weaning, resulted in increased growth and hastened maturity. The protamone-treated puppies were more aggressive and mentally alert than the control group.

The efficiency of gain in weight of the test group was 3% higher than in the control group, though this was not regarded as significant in view of the number of puppies involved.

Studies with radio-active iodine [I^{131}] on the 48th day of trial indicated a 24% reduction of thyroid function of the puppies receiving protamone.—G. DAVIES.

FRANCIS, K. C. & MULLIGAN, R. M. (1949.) **The weight of the pituitary gland of the male dog in relation to body weight and age, with a differential cell count of the anterior lobe.** —*J. Morphol.* **85.** 141-161. 849

A study of the pituitary glands from 55 normal male dogs of varying weights indicated that the mean weight of the gland was 77·625 ± 16·2 mg. and that individual body weight is an accurate indication of the pituitary gland weight. The single sagittal section method was found a reliable means of preparing material for differential cell counts, average values being:— acidophiles 57·518%, chromophobes 31·001%, basophiles 7·788%, and type II cells 3·48%. The values of individual anterior lobe cells showed little significant difference with age. However, a small increase in acidophiles was noted in adolescents suggesting that these cells release the growth hormone.—J. A. NICHOLSON.

CROSS, B. A. & HARRIS, G. W. (1950.) **Milk ejection following electrical stimulation of the pituitary stalk in rabbits.** [Correspondence.] —*Nature, Lond.* **166.** 994-995. 850

Following stimulation of the pituitary stalk, kymographic recording of milk flow from a single teat duct in anaesthetized lactating rabbits, after a latent period of about 25 sec. indicated that a peak is reached after 90 sec., gradually subsiding to the original level in 4–7 min.

Intravenous injection of 200 M.U. of posterior pituitary extract gave similar ejection responses after a latent period of 10–15 sec.

—R. MARSHALL.

SCHULTZE, W. H. (1951.) Afweerfuncties, bijnierschors en het "stress" begrip. [**Defence mechanism, adrenal cortex and the stress syndrome.**]—*Tijdschr. Diergeneesk.* **76.** 556-569. 851

A discussion of the present views on the interaction of "damage" and "defence" in the body, resulting in the "general adaptation syndrome" according to the theory of Selye.

—A. J. ULTÉE.

SELYE, H. (1951.) **An extra-adrenal action of adrenotropic hormone.**—*Nature, Lond.* **168.** 149-150. 852

It has been held that all the known actions of adrenotrophic hormone are brought about by the hormones released by the adrenal cortex since the injection of this hormone produces no obvious changes after adrenalectomy. Experiments with adrenalectomized, spayed rats indicate, however, that adrenotrophic hormone synergizes the thymolytic effect of a corticoid hormone such as cortisone and by itself can produce involution of the thymus.

—J. A. NICHOLSON.

LOCKE, W., TALBOT, N. B., JONES, H. S. & WORCESTER, J. (1951.) **Studies on the combined use of measurements of sweat electrolyte composition and rate of sweating as an index of adrenal cortical activity.**—*J. clin. Invest.* **30.** 325-337. [Authors' summary and conclusions copied *verbatim.*] 853

Intensity of thermal stimulus, skin temperature and rate of sweating bear an important relation to sweat electrolyte composition. Certain hormones act to modify sweat composition relative to these factors. Such hormonal action can be appraised by use of an index which ex-

presses sweat chloride concentration values relative to rate of sweating.

Studies suggest that the chief determinant of sweat chloride-rate index is an adrenal cortical hormone which, like desoxycorticosterone acts chiefly upon electrolyte and water metabolism.

Measurement of the sweat chloride-rate index suggests strongly that the normal adrenal cortices can undergo wide variations in activity in response to physiologic, homeostatic needs. Under physiologic conditions, adrenal cortical production of desoxycorticosterone-like hormones may subside to levels comparable to those existing in patients with primary pathologic hypoadrenocorticism.

The possibility that the sweat chloride-rate index measurement may have diagnostic value in miscellaneous conditions is exemplified by preliminary observations on four patients with idiopathic hypertension.

Cristol, P. (1948.) Précis de chimie biologique médicale. **[Précis of medical biochemistry.]** pp. 652. Paris: Masson et Cie. 4th Edit. Fr. 1150. **854**

This useful book was originally written in 1934 for the benefit of medical students at Montpellier, biochemistry becoming of increasing importance in the study of medicine. In this fourth edition written in 1946, so soon after the 1941-45 period when France was isolated and had no access to current literature of other countries, the author asks that these conditions should be borne in mind. The subject matter has been revised, corrected and where possible augmented and a new chapter on diastases, vitamins and hormones has been added.

The book is well bound, paper and printing are good and figures and organic structural formulae are clearly set out.—E.M.J.

See also abts. **874** (rate of blood flow in the umbilical cord); **877** (endocrinology of spermatogenesis in birds).

LIVESTOCK HYGIENE

Waite, R., Macdonald, W. B. & Holmes, W. (1951.) **Studies in grazing management. III. The behaviour of dairy cows grazed under the close-folding and rotational systems of management.**—*J. agric. Sci.* **41.** 163-173. [Authors' conclusions copied *verbatim.*] **855**

The cows studied in this experiment followed a definite pattern of behaviour while grazing. The time spent in gathering food varied by only a small amount, and this pattern was almost unaffected by the system of grazing management. There was a tendency for the cows to graze for a shorter time on herbage of low moisture content, i.e. on the longer, stemmier, less nutritious type of grass. These observations emphasize the need to provide the grazing animal with pasture which will provide sufficient nutrients in the time normally spent in grazing.

Meldrum, G. K., Green, R. J. & Thompson, D. S. (1951.) **East Coast sheep weaner trials —1950.**—*Tasm. J. Agric.* 22. 72-84. **856**

Problems of sheep weaner management on the East Coast of Tasmania are discussed in relation to control of parasites, grazing on improved pasture and fodder crops in winter, and drenching with copper and cobalt.

—R. Reid.

Gordon, J. G. & Tribe, D. E. (1951.) **The self-selection of diet by pregnant ewes.**—*J. agric. Sci.* **41.** 187-190. [Authors' summary copied *verbatim.*] **857**

Eight Cheviot ewes, bearing twins, housed in individual pens, and given the choice of a protein concentrate, a carbohydrate, hay, minerals and water, failed to select a ration that allowed them to bear and rear strong healthy lambs. Three ewes maintained under these conditions developed a condition resembling pregnancy toxaemia. The amount of food eaten by each ewe decreased during the last few weeks of pregnancy. This is probably the reason for the disappointing performance of the ewes at lambing.

The possible influence on the behaviour of the ewes of the constant presence of food is discussed.

REPRODUCTION AND REPRODUCTIVE DISORDERS

Hirschfeld, W. K. & Van der Plank, G. M. (1950.) Veeteelt en kunstmatige inseminatie. **[Cattle breeding and artificial insemination.]** —*Tijdschr. Diergeneesk.* **75.** 250-258. [English, French and German summaries. Abst. from English summary.] **858**

Chiefly a statistical enquiry into the methods of evaluating young bulls for artificial insemination purposes. The lactation performances by weight of female collaterals in the pedigree were investigated, and corrected for age and for "repeatability"—the consist-

ency with which a cow in subsequent years maintained and improved upon a promising heifer lactation. A correlation coefficient of 0·6 was thus obtained. The sources and extent of material studied are not given. For butterfat, disregarding correction for age, coefficients of 0·7 for the first two lactation periods and 0·8 for later ones wer obtained. In regard to the risk of over-close inbreeding with A.I., apart from special cases the authors recommend that this shall not be carried beyond 25%, *i.e.*, a heifer having the same bull as sire and maternal grandsire should not be sent back to that same bull.—F. L. M. Dawson.

Maricz, M. (1951.) L'insémination artificielle au Congo belge. **[Artificial insemination of cattle in the Belgian Congo.]**—*Bull. agric. Congo belge.* **42.** 107-116. 859

The collecting tube is placed in a heavy wooden holder, immediately it has been filled, to protect it from sunlight. The inseminating nozzle used is of ebonite, and the cervical method with an electrically lit speculum is used by African operators. M. finds that very dense semen, flaky to the naked eye, tends to have a consistent high percentage—about 50—of tailless or dead spermatozoa. Such samples were not used. The average density of the samples inseminated was 1,400,000 per cu. mm. Most were diluted 1:4, a few up to 1:12. Cooling was carried out very gradually and 90% of spermatozoa remained motile after 20 days' storage; four cows conceived to 16-day-old semen. A vasectomized bull was run with the herd to detect cows in oestrus: a repeat insemination after "several hours" was made if the cervical canal appeared at first not fully open. Results as they accumulated proved this to be most necessary. 78 cows were inseminated in the course of a year and 65 held, 54 of these to the first or second treatment.

Venereal disease is not yet recognized in the cattle of the Congo, though well recognized elsewhere in Africa. Livestock improvement is the main immediate object. Plans for extension actively progress. Calls from farmers are to be answered exclusively by carrier pigeon.

—F. L. M. Dawson.

Besançon, R., Brochart, M. & Hennion, C. (1950.) Rôle du massage utérin pratiqué lors de l'insémination artificielle sur le pourcentage des fécondations. (Résultats préliminaires). **[Effect of uterine massage on rate of conception following artificial insemination.]**—*Bull. Acad. vét. Fr.* **23.** 493-494. 860

It had been suggested that massage of the bovine uterus at the time of insemination might accelerate ovulation and hence increase the chances of fertilization. Accordingly the authors divided the day's total of insemination into two and in half the cases the neck and body of the uterus were massaged for 1–3 min. at the time of insemination.

Of 398 massaged inseminations there were 61·8% non-returns after three months, and of 574 inseminations without massage there were 59·7% non-returns. The difference was not statistically significant, but there appeared to be a slight increase in successful massaged inseminations over the period of observations and the observations are therefore to be continued.

—E. J. H. Ford.

Ferreira Barretto, J. & Mies Filho, A. (1949.) O emprêgo da dose individual no transporte de sêmen e na inseminação artificial em bovinos. **[An apparatus for the transport and injection of individual doses of semen in artificial insemination.]**—*Publ. Minist. Agric., Rio de Janeiro.* No. 5. pp. 10. 861

Descriptions and illustrations are given of the syringe, speculum, storage tubes, cooling flasks, containers etc. recommended for artificial insemination in cattle.—Anita M. Mandl.

Blackshaw, A. W. & Emmens, C. W. (1951.) **The interaction of pH, osmotic pressure and electrolyte concentration on the motility of ram, bull and human spermatozoa.**—*J. Physiol.* **114.** 16-26. [Authors' summary slightly modified.] 862

The motility of ram, bull and human spermatozoa was studied *in vitro*, under various modifications of pH, osmotic pressure and chemical composition of diluents, the glucose and sodium chloride content of the diluents being varied to give tonicities ranging between that of 0·41 and 1·53% sodium chloride. These diluents were buffered with citric acid-phosphate, sodium phosphates or sodium carbonate-bicarbonate mixtures.

Ram and bull spermatozoa showed maximum motility at about pH 7 and human spermatozoa at about pH 8·5. At a pH between 9·3 and 9·7 and in either hypertonic or isotonic media, the partial replacement of sodium chloride by glucose is favourable to motility in all three species. At the highest osmotic pressure and at pH 8·5–8·7 motility is maintained better in hypertonic glucose containing 0·14% of sodium chloride than at a similar tonicity in the presence of a higher concentration of sodium chloride, although the initial motility may be lower. Under all conditions in the species ex-

amined, the hypotonic diluents employed were more deleterious to motility than the hypertonic diluents.

SMITH, A. U. & POLGE, C. (1950.) **Survival of spermatozoa at low temperatures.**—*Nature, Lond.* **166.** 668-669. **863**

The effect of freezing diluted and undiluted semen derived from various species is described. The presence of glycerol in the diluent has a variable effect on motility, oxygen consumption and fertilizing capacity according to species.

—ANITA M. MANDL.

SMITH, A. U. & PARKES, A. S. (1951.) **Preservation of ovarian tissue at low temperatures.**—*Lancet.* **261.** 570-572. [Authors' conclusion and summary modified.] **864**

The authors found that, by freezing ovarian tissue of the rat to very low temperatures in special media, it could be preserved for grafting, probably for long periods. The same may well apply to other species, and perhaps to other endocrine organs, and interesting therapeutic possibilities may be envisaged.

BIELAŃSKY, W. & EWY, Z. (1951.) **The effect of oestrogens on the reproductive functions of the stallion.**—*Acta endocrinol.* **6.** 272-284. [In English. Abst. from authors' summary.] **865**

The authors examined urine and semen of 112 stallions to find a possible correlation between the quantity of oestrogenic substances excreted in the urine, the volume of ejaculate, the concentration and morphology of the spermatozoa, and the libido.

The oestrogen content of the urine of stallions decreased with advancing age. No correlation was found between the amount of oestrogenic substances in the urine and the volume of semen, its concentration, or the motility of the spermatozoa. The number of spermatozoa with secondary changes increased, however, with the decrease in the quantity of the oestrogenic substances excreted in the urine. No marked effect of the oestrogen content on the libido was demonstrated.

DIDCOCK, K., ROBSON, J. M. & SHARAF, A. A. (1951.) **Prolongation of action of chorionic gonadotrophin.**—*Brit. J. Pharmacol.* **6.** 445-447. [Authors' summary copied *verbatim.*] **866**

A method of making implants containing chorionic gonadotrophin, by compressing a mixture of the hormone and magnesium monostearate into tablets, is described. When implanted subcutaneously into immature mice, the tablets produced an effect lasting for about 20 days. Other possible uses of the method are discussed.

BROLIN, S. E. & LINDBÄCK, M. (1951.) **The reacting capacity of the gonads after adrenalectomy as judged by the response to gonadotrophins in the rat.**—*Acta endocrinol.* **8.** 55-71. [In English. Authors' summary modified.] **867**

The direct relation between the adrenal glands and whether the gonads were supplied with specifically important substances by the adrenal glands were discussed. The ability of the adrenal cortex to exert a substitutional action on the target organs of the gonads, *i.e.*, the secondary sex glands, is not considered since this constituted a peculiar and accessory type of direct connexion. A direct relationhip in the defined sense was not observed, since the gonads and their target organs reacted strongly to gonadotrophins in both sexes even after adrenalectomy. As the time of treatment was extended three weeks, a storage in the gonads can reasonably be considered as insufficient for the powerful reactions which were obtained.

It may be mentioned that the reactions of the auxiliary glands of males and of the uterus of females following treatment with gonadotrophins were enhanced by adrenalectomy.

When females were treated with the highly purified LH [luteinizing hormone] preparation, gonadex, the presence of enlarged follicles was observed, and probably caused by the FSH [follicle stimulating hormone] production in the pituitary of the test animal itself. Gonadotrophin containing a large amount of the FSH principle caused a still more marked follicular hypertrophy and moreover a marked diminution of the number of small follicles. The tendency to such an exhaustion of the ovaries by a strong stimulation was found to be much less, in the groups treated with gonadex.

BROLIN, S. E. & ARTURSON, G. (1951.) **The response of the thymus to treatment with gonadotrophins in adrenalectomized rats.**—*Acta endocrinol.* **8.** 72-80. [In English. Authors' summary slightly modified.] **868**

The thymus regarded as target organ for steroid hormones was studied after treatment with different gonadotrophins in non-operated and adrenalectomized rats. The results were judged by statistical calculations of the thymus weights and by microscopic examination.

It is possible, in both sexes, to cause a statistically significant and microscopically obvious thymic involution if the adrenal glands have been removed. In females no differences could be demonstrated, regarding the frequency and degree of involution between non-operated and adrenalectomized groups after treatment; in

males, however, an involvement of the adrenal glands plays a prominent role when thymic involution is brought about by the hormonal production of the gonads.

ROLLINSON, D. H. L. (1950.) **Reproductive failure in the bull—its diagnosis and prognosis.**—*Vet. Rec.* **62.** 527-533. **869**

The history in regard to results of service from a suspected bull should be tabulated in units of six months each. The vendors of recently purchased bulls should be informed before an examination is made. R. confirms Lagerløf's view that bulls in the acute stage of genital infections are willing and able to perform service. It appears that from 10–20% of discarded bulls are infertile or from four to seven thousand annually in Great Britain. The study comprised 121 bulls of which 82 were abnormal, mostly Shorthorn, Channel Island, and Friesian breeds. Jerseys appeared much the most apt to become infertile. Congenital defects, among which hypoplasia was prominent, accounted for nearly one fifth of the cases. Occasionally one meets with a hypoplastic bull which is capable of siring a few calves.

For diagnosis of genital inflammation, importance is attached to the number of leucocytes per field, in centrifugate from a portion of preputial washing. Occurrence of mucosal cells may be suggestive of trichomonad infection. Seminal viscosity increases markedly as the proportion of leucocytes rises. R.'s figure for the normal pH range is given at 6·0–6·4. Accessory secretions containing little true ejaculate give readings a full unit higher. Swelling and thickening of the middle piece is held to be the most serious spermatozoon abnormality. The presence of from 5% of abnormal spermatozoa appears to impair fertility. In extreme testicular degeneration the medusa formations of Blom may exceed the spermatozoa in number per unit volume. Detailed directions are given for rectal palpation of the genitalia.

Almost the only abnormality to justify treatment is testicular degeneration in its earlier stages. Management changes only are recommended for long term results, though pregnant mare's serum (dosage and route not stated) is reasonably reliable for rapidly boosting libido and sperm density.—F. L. M. DAWSON.

SVANBERG, O. & SANDSTEDT, H. (1948.) Näringsmiljön och fruktsamheten hos nötkreatur. **[Nutritional environment and the fertility of dairy cows.]**—*Skand. VetTidskr.* **38.** 311-324. [English summary copied *verbatim*.] **870**

The environmental conditions affecting the nutrition of dairy herds are briefly reviewed with particular reference to their potential influence on fertility. A distinction is drawn between uncontrolled, natural conditions and those determined by agricultural practice and general management. It is pointed out that the standard of nutrition may vary considerably from year to year according to the meteorological conditions obtaining during crop growth.

Of the many factors which can affect the fertility of cows the following are discussed: the amount of fodder consumed, the importance of protein, the danger of phosphate deficiency during winter feeding and in summer pastures, and some other aspects of feeding practice found to be significant.

The nutritional conditions obtaining during the feeding of young cattle appear to be of great importance in regard to their future reproductive capacity, and unfavourable periods can exert detrimental effects of disproportional duration.

ERIKSSON, K. (1950.) **Heritability of reproduction disturbances in bulls of Swedish red and white cattle (SRB).**—*Nord. Vet.-Med.* **2.** 943-966. [In English. German and French summaries.] **871**

3,266 SRB bulls were classified as either normal, unable to serve, unable to fertilize, or both the latter. The male pedigrees for four generations were analysed. A bull which appeared a significantly greater than normal number of times in the pedigree of sexually weak bulls was classed as subnormal; similarly for supernormal bulls. It was then determined if a bull, subnormal or supernormal in one generation was similarly classified in other generations in which it was used.

It was concluded that hereditary factors contribute to the origin of sexual disturbances in SRB bulls, and these disturbances which are widespread throughout the breed occur in bulls with the same pedigree as sexually normal bulls. This fact gives ground for the hope that by the selection of "good" factors in the breed its sexual vitality may be revived. This may be done by selecting sexually strong young bulls. A basic necessity is thus a method of early diagnosis of sexual weakness.—H. BOYD.

WEBER, W. (1949.) Gehirnmissbildung bei einem Rinderföten. **[Brain deformation in a cow foetus.]**—*Acta Anat., Basle.* **7.** 207-212. [English and French summaries. English summary slightly modified.] **872**

The fissure in the midbrain of a 20 mm. 6-week-old bovine foetus is described. Three layers had developed in the wall of the mid-

brain and as a result of the patent neural fissure the walls of the midbrain had formed paramedian swellings towards the sides of the head.

KERR, W. R., ROBERTSON, M. & MCGIRR, J. L. (1951.) **A study of the reaction of the white blood corpuscles in bovines at parturition with a consideration of the evidence of the action of the adrenal cortical hormone (cortisone.)**—*J. Hyg., Camb.* **49.** 67-80. [Authors' summary slightly modified.] **873**

A study was made of the reaction of the white blood corpuscles in bovines at parturition.

Graphs made from the differential total counts of the white blood corpuscles from shortly before calving and at intervals through the period of parturition and for 24–48 hr. after calving show a definite absolute lymphopenia with a rise in the neutrophils. The type of graph produced resembles that found in bovines when cortisone is injected.

The peak of the white blood cell reaction usually takes place about 5–9 hr. after the delivery of the calf. This is also the period of peak reaction in the cellular relations after injection of cortisone. The observations recorded seem to afford positive evidence that C11 hydroxy steroids (cortisone) are poured out in the last stage of parturition in the normal bovine. The desensitization of the skin in animals which were sensitized to *Trichomonas foetus* antigen which was found at this time is considered to be connected with the action of the hormone.

GREENFIELD, A. D. M., SHEPHERD, J. T. & WHELAN, R. F. (1951.) **The rate of blood-flow in the umbilical cord.**—*Lancet.* **261.** 422-424. [Authors' summary copied *verbatim.*] **874**

The rate of blood-flow in the umbilical cord of a normal 93-day [human] foetus, weighing 46·9 g., was 2·1 ml. per min. [S.E. of mean of 12 observations $\pm 0{\cdot}09$).

Observations were begun $1\frac{3}{4}$ min. after delivery of the foetus, and were completed 8 min. after delivery.

DONALD, H. P. (1951.) **Bovine five-egg quintuplets.**—*Vet. Rec.* **63.** 179-180. **875**

D. describes the birth of five live young to a four-year-old Shorthorn cow weighing about 10 cwt. There were two different roan heifers, one red bull and two white heifers also slightly different, hence it is concluded the calves arose from five separate eggs. At 10 days of age body weights ranged from 30–45 lb. D. discusses the possibility of the heifers being freemartins and also the sex ratio in this and 11 other recorded sets of bovine quintuplets. The excess of females approaches significance.

—E. J. H. FORD.

BARTON, R. A. (1951.) **Is age of parents important in sheep?** [Correspondence.]—*Nature, Lond.* **168.** 37. **876**

From an examination of data culled from the catalogues of ram sales, and from the 1948 Flock Book of the New Zealand Romney Marsh Breed Society it was tentatively concluded that rams born of young parents fetch the highest prices, but this is a preliminary note and further analyses are planned.—G. B. S. HEATH.

KUMARAN, J. D. S. & TURNER, C. W. (1949.) **The endocrinology of spermatogenesis in birds. III. Effect of hypo- and hyperthyroidism.**—*Poult. Sci.* **28.** 653-665. **877**

An account is given of the effect of hypothyroidism induced by the feeding of graded amounts of thiouracil, and of mild hyperthyroidism induced by the feeding of thyroprotein, upon the spermatogenesis of White Plymouth Rock cockerels, and upon the endocrine activity of the interstitial tissue.

Details are given and the respective weghts of body, testes, comb, thyroid, and pituitary gland are recorded.

The observations indicated that the hypothyroidism induced by the feeding of graded amounts of thiouracil up to 0·6% is without effect upon the secretion of the pituitary gonadotrophic hormone F.S.H. [follicle stimulating hormone] but progressively depressed the secretion of I.C.S.H. [interstitial cell stimulating hormone].

Mild hyperthyroidism in cockerels had only a slight stimulating effect upon the secretion of F.S.H. by the pituitary gland, but had a more pronounced effect upon the secretion of I.C.S.H.—G. DAVIES.

ZOOTECHNY

LEE, D. H. K. (1951.) **Direct relationship between climate and animal welfare.**—*Proc. Spec. Conf. Agric., Aust.* 1949. pp. 9-27. London: H.M. Stationery Office. 20s. [Author's summary and conclusions copied *verbatim.*] **878**

Recently developed interest in the direct relationships between climate and animals has indicated a necessity for reviewing the current methods and trends in climatic classification. For practical purposes the animal climatologist takes the heat balance of the animal as the main

index and climatic significance, and treats of other climatic stresses as secondary and complicating situations. Analysis of the physical conditions governing heat exchange between the animal and the environment, and of the animals' physiological responses to thermal stress, reveals that animals are much more varied in their responses than are plants, and that the significant climatic criteria are in many ways different from those affecting plants. A review of current methods of classifying climates reveals, however, that the purposes of the classifications, or the criteria upon which they are made are frankly botanical. Such classifications cannot, therefore, be expected to be applicable to animal needs. Plant climatologists have made their classifications by the successive applications of criteria based on the various climatic variables important to plants. Animal climatologists, on the other hand, have concentrated more upon finding a suitable single index with which to express the combined effect of the important climatic variables, and have left the question of applying such an index to the classification of climatic situations as a secondary consideration.

To deal adequately with the significance of even the thermal aspects of climates for animals, certain meteorological data, physical constants and physiological responses must be known in some detail. In many respects this information is wanting, and immediate steps are necessary to obtain the information set out. Meteorological recording should be expanded or modified to furnish the badly needed data.

MARSTON, H. R. (1951.) **The influence of climate and terrain on the nutrition of grazing ruminants.**—*Proc. Spec. Conf. Agric., Aust.* 1949. pp. 247-262. London: H.M. Stationery Office. 20s. [Author's conclusions copied *verbatim.*] **879**

When dealing with problems of nutritional disabilities it should be realized that there is a wide range of decreasing physiological efficiency between the optimum intake of an essential nutrient and the level of deficiency at which frank symptoms appear. The definition of a limiting factor becomes more difficult within this range because growth and production of the plant or animal are reduced without disclosing a clue to the disability. The recognition and correction of limitations imposed by deficiencies in this category, however, are undoubtedly of greater importance to agriculture than the correction of the more obvious disabilities imposed by acute deficiencies. The former are more subtle and more prone to seasonal and climatic influences; but they are wider-spread and they take a greater overall toll from production.

As deficiencies of trace elements in the soil rarely occur singly, interactions between several limiting factors frequently present a complicated picture that is rendered no less confusing by the differences in the ability of various species of plants to gather their requirements from a difficult terrain. Empirical methods in such circumstances are unlikely to define successfully the nature of the limiting factors—the appearance of lesions, for example, is no longer a reliable guide, for these are usually the final expression of a defect which might arise from a failure of any one of a number of links in a chain of metabolic events, and so may lack specificity.

A fruitful approach to problems entailed in the recognition of deficiencies is through experimental trial designed to yield quantitative data that integrate the variables involved; and when setting the course of such experiments and interpreting the results which accrue from them, a knowledge of the physiological functions which these elements assume in plants and animals may be deemed essential. This is indeed the kernel of all of the problems which are likely to be discussed at this section of the conference. The existing knowledge of these functions is fragmentary and barely more than a beginning, but it is sufficient to render clear that we cannot hope to progress far in the applied field without the help that more fundamental research will provide.

HOWIE, J. W. (1951.) **Climatic influences on the nutrition of suckling pigs.**—*Proc. Spec. Conf. Agric., Aust.* 1949. pp. 357-364. London: H.M. Stationery Office. 20s. [Author's summary copied *verbatim.*] **880**

Young pigs farrowed and reared indoors in cold, damp, and draughty quarters grow slowly and uneconomically. About one-third of them die before weaning at eight weeks of age. The superior health and growth of pigs farrowed and reared outdoors seems to depend less on their access to iron or unknown nutrients in soil and grass than to the greater comfort afforded by the wooden ark huts in which they are housed. The clinical and pathological features of the sick indoor pigs are essentially those of cardiac failure.

Discussion of a working hypothesis put forward as an attempt to explain the sequence of events reveals that a complete understanding of the events described cannot be gained without, among other things: (i) practical methods of

making continuous and reasonably accurate records of the cooling power of pig houses; and (ii) determinations of the critical temperatures of pigs of different breeds at younger ages than those so far studied.

The architectural and engineering problems involved in designing and erecting warm, dry, and well-ventilated farrowing houses deserve further thought and study.

McLAGAN, J. R. & THOMSON, W. (1950.) **Effective temperature as a measure of environmental conditions for pigs.**—*J. agric. Sci.* **40.** 367-374. **881**

It seems that little pigs can spend short periods in a cold environment without adverse effect, provided they have somewhere warm to sleep. In this experiment "arks" with outdoor runs proved superior to open pens with wooden sleeping platforms, arks with indoor runs, and uninsulated pens in a piggery, in that order. The differences in effective temperature of the sleeping quarters were not great, but the environment which produced the best pig had the highest effective temperature.—J. T. DONE.

FERNANDEZ, A. H. (1950.) La identificación de los équidos. **[Identification of horses.]**—*Cienc. vet. (Bol.)* **11.** 31-34. **882**

F. advocates the introduction of a system of registration for horses (and later also for cattle) which is designed to aid the compilation of vital statistics and to put trading on a more equitable basis.

The system is outlined in detail and comprises the branding and the issue of an identity document for the lifetime of the animal, as well as the maintenance of municipal and provincial registers.—G. P. MARSHALL.

KOCH, W. (1950.) Die Wirkung hoher Dosen von Oestrogenen auf Stoffwechsel und Mast bei Rindern. **[Effect of large doses of oestrogens on the metabolism and fattening of cattle.]**—*Berl. Münch. tierärztl. Wschr.* No. 10. pp. 211-213. **883**

Following the administration to cattle of synthetic oestrogens as implants or as injected suspensions [1 g. 'Foragynol' (3, 4-di-(acetoxyphenyl)-hexadiene, or 0·5 g. stilboestrol] there occurs a depression of appetite and a loss in 'condition'. After 3–6 weeks, however, the appetite markedly improves and there is a rapid gain in weight. In one experiment the mean daily gain was 50% greater than in the untreated controls. In all some 57 animals, including steers and bulls, were treated. Seven tuberculous cows were injected with 1 g. 'Foragynol' suspension. The 'condition' of three became so bad as to necessitate slaughter; the remaining four, however, after an initial loss of weight, regained their appetite and 11 weeks after the treatment were in good 'condition'. These results and the possible practical applications of oestrogens for fattening animals are discussed.—A. T. COWIE.

MULLINS, J. (1951.) **Danger through faulty use of balling or drenching guns.**—*N.Z. J. Agric.* **82.** 405. **884**

A useful paper, in which hints are given to lessen the risk of damage caused by the unskilful use of balling guns by laymen.

—G. B. S. HEATH.

ANON. (1950.) **[The three-year animal husbandry development plan.]**—*Veterinariya, Moscow.* **27.** No. 5. pp. 1-15. **885**

This is an official circular issued in pursuance of the "Three-year Animal Husbandry Development Plan (1949-51)", summarizing broadly the progress made, or otherwise, during the first year, with directives for the future course of action. It is divided into nine main headings: (1) Development of livestock on collective farms; (2) Improvement in feeding; (3) Mechanization; (4) Buildings; (5) Development of livestock on state farms; (6) Improvement of breeds; (7) Veterinary services; (8) Training of veterinary staffs and workers; (9) Research work.—F.A.A.

TECHNIQUE AND APPARATUS

See also absts. **647** (purification of tuberculin); **648** (infra-red spectroscopy of *M. tuberculosis*); **662** (antiglobulin test in brucellosis); **705** (electron microscopy of Negri bodies); **861** (artificial insemination apparatus); **864** (preservation of ovarian tissue at low temperatures).

MISCELLANEOUS

VAN SOMEREN, V. D. (1951.) **The red-billed oxpecker and its relation to stock in Kenya.**—*E. Afr. agric. J.* **17.** 1-11. **886**

The author gave an account of the distribution and habits of the red-billed oxpecker or tick bird, *Buphagus erythrorhynchus*, a well known bird in East Africa. The main bulk of its food consists of various species of ticks. Many flies, *e.g. Musca* and *Stomoxys* are also eaten and a few mites, lice and non-parasitic insects. A certain amount of hair is constantly present in the proventriculus. The birds will also "work over"

freshly removed hides, probably for serum and blood. Unfortunately their useful habits are counterbalanced by the fact that, in order to obtain blood, they enlarge and keep open sores on domesticated animals.

Tick birds tend to disappear from a farm when the cattle are dipped regularly.

The paper contains much other interesting ornithological information.—J. R. HUDSON.

BLAINE, G. (1951.) **Absorbable gelatin sponge in experimental surgery.**—*Lancet*. **261.** 427-429. [Author's summary copied *verbatim*.] **887**

British-made gelatin sponge has been investigated to establish its biological behaviour. It was absorbed by phagocytosis in 4–6 weeks after operation. Gelatin sponge is considered safe for implantation as an absorbable haemostatic in surgery. It produces haemostasis promptly and adheres readily to bleeding surfaces. If too much gelatin sponge is implanted it does not become absorbed normally, because it prevents the access of phagocytes to the centre of the implant.

COLEBROOK, L. & COLEBROOK, V. (1951.) **A suggested national plan to reduce burning accidents. Based on a study of 2000 cases.**—*Lancet*. **261.** 579-584. [Abst. from authors' summary.] **888**

An account of the circumstances in which patients got burnt, with suggestions, based on analysis of the cause of the accidents. Recommendations for the prevention of such accidents are:—Government action to secure the better guarding of all domestic fires; allocation of enough metal to make guards; and removal of purchase-tax from all fires that conform to the safety standard.

REPORTS

GREAT BRITAIN. (1950.) **The Edinburgh and East of Scotland College of Agriculture. Report for the year ending 30th September, 1950.** pp. 111. Items of veterinary interest pp. 50-52 and 60-65. Edinburgh: The College. **889**

The digestibility of experimental types of hay, the lignin fraction in fodder, amino acids in grassland species and the determination of certain minerals in plant material were studied.

The routine diagnostic and advisory veterinary service continues to be widely used. Special investigations over the year included: ABORTION in ewes, TICK FEVER as a cause of abortion in sheep, BORDER ORF and CONTAGIOUS PUSTULAR DERMATITIS, LEPTOSPIROSIS in pigs, CALF PNEUMONIA, SARCOPTIC MANGE in cattle, BOVINE MASTITIS, CARBON TETRACHLORIDE POISONING, CHRONIC ENTERITIS and ADENOMATOSIS of sheep, HELMINTHIASIS and lactating virgin gimmers.—CHARLOTTE M. WOOD.

AUSTRALIA. NORTHERN TERRITORY. (1950.) **Fourth Annual Report, 1949-1950, (covering activities for year ending 30th June, 1950), Animal Industry Division, Northern Territory Administration.** [ROSE, A. L.] pp. 26. Alice Springs. [Mimeographed.] **890**

Details of several outbreaks of BOVINE CONTAGIOUS PLEURO-PNEUMONIA are given. A survey to define the geographical distribution of *Boophilus microplus* was begun. Investigations on the value of bone-meal in controlling BOTULISM are planned.

Special attention was given to KIMBERLEY HORSE DISEASE and BIRDSVILLE DISEASE OF HORSES. Feeding trials with *Indigofera enneaphylla* confirmed that it is a cause of BIRDSVILLE DISEASE. Other poison plants studied were *Erythrophleum laboucherii*, *Isotropis atropurpurea* and *Euphorbia clutioides*.

The report contains many statistical data on stock numbers and movements.

—H. MCL. GORDON.

HONG KONG. (1949.) **Report of the Veterinary Officers for the financial year 1st April 1948-31st March 1949.** [ROBERTSON, R. H. & ALTON, G. G.] pp. 4. **891**

RINDERPEST and RABIES have been the main disease problems. Immunization against both diseases is visualized for the future. Statistics of food exports, abattoirs and kennels constitute the rest of the report.—W. S. MARSHALL.

DENMARK. (1950.) Årsberetning fra Veterinaerdirektoratet for Året 1948. **[Annual Report of the State Veterinary Service, Denmark, 1948.]** [NIELSEN, F. W.] pp. x+209, Copenhagen: Universitets-Bogtrykkeri. [French summary.] **892**

The organization of the Veterinary Directorate is briefly described. The livestock disease situation in 1948 was as follows, with regard to the principal diseases: there were three outbreaks of ANTHRAX, three of F. & M. DISEASE, seven of EQUINE INFECTIOUS PARAPLEGIA, five of BOVINE ENZOOTIC MENINGITIS, 12 of EQUINE MANGE, and seven of DISTEMPER in fur animals. Tabular data according to geographical incidence is given for many additional diseases.

The usual diagnostic work was carried out

in connexion with BOVINE BRUCELLOSIS and 67,000 cattle wer immunized. BOVINE TB. has been eradicated from the Danish islands and is nearly eradicated from the mainland, the statistical figures for TB.-free herds being 99·3%.

Annual census figures and meat and milk control information are given.—J. EDWARDS.

HOLLAND. (1950.) Mededelingen betreffende de Gezondheidsdienst voor Vee in Friesland. 31e Jaarverslag, 1 Mei 1949–30 April 1950, [**31st Annual Report of the Livestock Health Service in Friesland.**] pp. 62. **893**

In the year 1949-50 the intradermal tuberculin test was for the first time in exclusive use and 250,000 cattle were tested. 88% of all tested herds were free from TB. and much progress was made in clearing up the remainder. The percentage figure for reactors was only 1·6. The situation in each locality is shown in tables. The ophthalmic tuberculin test has given good service for nearly 30 years and has been instrumental in ridding very many herds of TB. Non-specific reactions to the intradermal test will be avoided as much as possible by the use of mammalian and avian types of tuberculin. Of 72 cattle from TB.-free herds which were marked as positive reactors to the test with both types of tuberculin, only 43 (60%) were found to be tuberculous P.M., but all except two of 40 similarly reacting cattle from herds known or thought to be infected, were tuberculous P.M. Bacteriological diagnosis for the detection of open cases of TB. have been continued and figures are given for the past 30 years. From May 1950 it was enacted by the Friesian legislature that no man may keep a beast reacting to the tuberculin test; such an animal must be given up to the Health Service for a sum of money decided by official valuers. The regulations about this are described. JOHNE'S DISEASE has increased in incidence during recent years and in 1949, 19% of some 2,000 faecal samples were positive. The intradermal johnin test is said to be of limited value, being reliable in some localities and not in others. PASTEURELLA PNEUMONIA in cattle of all ages is referred to as a disease calling for special attention. Many outbreaks occurred. The use of specific antiserum was not satisfactory, but good therapeutic control was obtained with sulphamethazine parenterally and sulphanilamide orally, together. In 1950 a provincial scheme for the control of BOVINE BRUCELLOSIS was started. The object is to form disease free areas. The routine method of diagnosis to be used is the *Br. abortus* ring test of milk. Vaccination of heifers with Strain 19 is also used.

Much attention was paid to STERILITY IN CATTLE and 335 bulls were examined either to ensure that they were sound, or to diagnose the cause of infertility. The results are given in detail. VIBRIONIC STERILITY was widespread and TRICHOMONIASIS relatively less important.

Ox warbles were under fairly good control during the year and only a few herds were greatly troubled.

Artificial insemination was in use on a large scale; 44 bulls were kept and 3,345 inseminations were carried out. The fertility rates for each bull are tabulated.—J. EDWARDS.

HOLLAND. (1950.) Vierde jaarverslag de provinciale gezondheidsdienst voor Dieren in Zuid-Holland, (1 Mei 1949 t/m 30 April 1950). [**Annual Report of the Livestock Health Service, South Holland.**] pp. 40. **894**

The livestock hygiene service was reorganized during the year and many local committees as well as a provincial council were formed. Lists are given.

Chief attention was paid to the control of TB. IN CATTLE. The situation was not very favourable for eradication schemes, yet three districts were chosen for energetic measures. In South Holland a quarter million cattle in 13,000 herds were tuberculin tested and 40·8% reacted. In the three selected districts reactors were removed after each test. The following figures show the great progress made, presumably within the year.

District	Cattle	Reactor % at tests		
		1st	2nd	3rd
Voorne	7540	25·5	4·6	0·4
Putten	7365	29·7	3·9	0·7
Rozenburg	1771	38	5·6	0·9

In the control of BOVINE BRUCELLOSIS 16,000 heifers were vaccinated. Cattle were treated on a large scale against warbles.

The report concludes with some statistical data.—J. EDWARDS.

SWEDEN. (1949.) Det civila veterinärväsendet år 1947. [**Sweden. Report of the Civil Veterinary Service for 1947.**] [LINDSTRÖM, S.] pp. 40. Stockholm: Kungl. Boktryckeriet. **895**

During the first half of the year a reorganization took place, in which the veterinary service became one of seven departments of the medical board. The new "Veterinärstyrelse" is organized into four bureaux (general duty, hygiene, tuberculosis and administrative); their duties are outlined. At the end of 1947 there were 662 veterinarians registered in Sweden; their type of work and location is shown in a table. The animal health situation is first dis-

cussed province by province and details of diseases are given in tables.

There wer 24 outbreaks of ANTHRAX, four of BLACKLEG and only one of F. & M. DISEASE. 139 cases of EQUINE INFECTIOUS ANAEMIA were diagnosed. In the campaign against TB. 13,500 herds were examined for the first time: 42% were infected (20% of all animals reacted to the tuberculin test). In herds previously placed under control, only 0·7% of the animals reacted. The incidence of BRUCELLOSIS in herds and animals is shown for each province.

Tabular data are given for milk inspection work, and for the incidence of 18 selected diseases in horses and cattle. Meat inspection records are also given.—J. EDWARDS.

SWEDEN. (1949.) Veterinärvård vid Armén år 1947 av Överfältveterinären. **[Sweden. Swedish Army Veterinary Service in 1947.]** pp. 20. Sveriges Officiella Statistik Hälso- och Sjukvård. Stockholm: P. A. Norstedt & Söner. **896**

In 1947 there were on active duty one chief army veterinarian, 7 army veterinarians, 8 regimental and 16 battalion veterinary officers, 6 posts being vacant.

The hygienic conditions for army horses were improved by better provision for sick animals. A study was made of the respective merits of permanent bedding and night bedding in separate establishments. No final decision was taken, but the latter method has certain advantages.

GRASS SICKNESS caused the death of four horses and a further four recovered. A short outbreak of RINGWORM which disappeared spontaneously occurred in one troop and STRANGLES broke out among remounts. Additional detailed information on diseases of army horses and dogs is given in tabular form.—J. EDWARDS.

U.S.A. (1951.) **Washington. Annual report of the Gorgas Memorial Laboratory, 1950.** [SILER, J. F.] pp. 36. Washington: U.S. Govt. Printing off. **897**

B.C.G. vaccination is being carried out on a large scale. By the use of drugs and D.D.T., an effort is being made to control MALARIA.

ROCKY MOUNTAIN SPOTTED FEVER has now been diagnosed in two human patients on the Isthmus of Panama; this is the first time that the disease has been identified in the area.

—G. B. S. HEATH.

U.S.A. (1947.) **New York. Report of the New York State Veterinary College at Cornell University for the year 1945-1946. No. 14a.** [HAGAN, W. A.] pp. 150. Geneva, N.Y.: W. F. Humphrey Press Inc. **898**

The post-war difficulties and problems for maintaining an output of trained veterinarians sufficient for future needs are discussed. Shortage of qualified teaching personnel has proved the greatest post-war obstacle to the ten existing Veterinary Colleges in the U.S.A. and this has been aggravated by an increased demand from the three new Veterinary Colleges which have been opened. The war-time courses of study of four sessions within three years have been discontinued and the old curriculum spread over four years has been resumed. Applicants for admission as students were so numerous that only one in eleven could be admitted. Most of these were ex-servicemen. Only one in 25 other applicants was accepted.

The diagnostic laboratories made 163,419 agglutination tests for BRUCELLOSIS; and examined 950 brains for RABIES (a record in the past 50 years); 56·9% were positive. The positive results were in 214 foxes; 194 dogs; 117 cattle; 11 cats; six racoons; three sheep; two horses and one pig. Diagnosis of rabies was by microscopic examination in 91% of cases and by animal inoculation in 8·9%. Many other diagnostic tests are made of which details are given.

The work being done at the Poultry Diagnostic Laboratories has greatly increased owing to outbreaks of NEWCASTLE DISEASE.

The Pathology Department made 614 P.M. examinations of animals including 173 cattle; 136 dogs; 110 sheep; 83 pigs; 69 cats and 43 horses.

Details of various research schemes are given.—J. A. GRIFFITHS.

U.S.A. (1950.) **Results of Research in 1949 by the Agricultural Experiment Station of the University of Kentucky. Sixty-second Annual Report of the Director.** pp. 92. Items of veterinary interest pp. 55-64. **899**

Research has been almost exclusively on diseases of equine animals except for some work on the serum levels of penicillin in cattle. P.M. examinations were made on 78 new-born foals and the infectious agents responsible for death were *Bact. viscosum equi* in 15, streptococci in nine, *Bact. coli* in two and the virus of equine abortion in three; anatomical disorders and gross pathological lesions not associated with bacterial infections were responsible for death in 25 foals and haemolytic icterus was observed in four. The cause of death in 20 foals could not be determined.

A diagnosis of equine virus abortion was

made in 44 cases by examination of aborted foetuses and foetal tissues based on the presence of intranuclear inclusion bodies in the hepatic cells or in the bronchial or alveolar epithelium. A total of 1,624 mares were vaccinated in the autumn of 1948 against VIRUS ABORTION with very satisfactory results. Further experiments were carried out on this disease following failure to establish infection in embryonated hens' eggs in 1948. The inoculum consisted of suspensions prepared from lungs and liver of infected equine foetuses. This was injected into duck embryos 10–12 days of age, into one-day-old hamsters intraperitoneally and into pregnant g. pigs intraperitoneally, without success. Inoculum derived from the third serial passage in g. pig foetuses failed to induce abortion in pregnant mares.

Pseudomonas pyocyanea was found in two aborted foetuses and in each case the foetus had been dead from 1–3 days. Studies were also made of the blood picture of pregnant, barren and nursing mares; of HAEMOLYTIC ICTERUS IN FOALS and of PARASITISM, especially the continuous administration of phenothiazine in horses; of agglutination reactions of *Clostridium* cultures and of salmonella and paracolon bacteria.—D. S. RABAGLIATI.

BOOK REVIEWS

LWOFF, A. [Head of the Department of Microbial Physiology, Pasteur Institute, Paris, France.] [Edited by.] (1951.) **Biochemistry and physiology of protozoa. Vol. I.** pp. x+434. New York: Academic Press Inc., $8.80. **900**

This very useful book collates the knowledge of the biochemistry and physiology of the Protozoa which has increased considerably in recent years. It consists of seven sections by different authors, and veterinarians will be especially interested in those dealing with the nutrition and metabolism of trypanosomes, the biochemistry of ciliates in pure culture, the biochemistry of plasmodia and the influence on them of antimalarial drugs, and to a somewhat lesser degree in that dealing with the nutrition of parasitic amoebae. A second volume is promised which will deal among other things with the ciliates of the rumen.

The style of writing makes reading easy even for the non-specialist. There are good author and subject indexes and each section has a list of references.—M.C.

STEYN, D. G. (1949.) Vergiftiging van mens en dier met gifplante, voedsel en drinkwater. **[Poisoning in man and animals with special reference to plant poisoning.]** pp. viii+264. Pretoria: J. L. Van Schaik Ltd. 25s. **901**

This book was written to meet requests for a publication dealing with plant poisoning problems particularly under the conditions affecting animal industry and human beings in South Africa. The author refers to the enormous losses in sheep in 1926-27 caused by Geeldikkop (Bighead) after ingestion of *Tribulus terrestris*, and other great losses from plant poisoning, these being greater than those from any other cause. Of 20,000 species of plants occuring in South Africa, about 300 are known to be poisonous. The author deals with the subject matter under 18 main headings, appropriately selected.

It is a great pity that this book is in Africaans only. Its publication in English would without doubt be welcomed by veterinarians and teachers in veterinary schools throughout the world.

The author has rendered the stock-owners, veterinarians and medical practitioners of his country a great service. Of him may well be said what the well-known British veterinarian, the late Prof. William Robertson said of the ancient Roman veterinarian Vegetius: "a thoughtful well-informed man, who, in addition to an ardent love of the subject of which he treats, has actually seen with his eyes what he describes with his pen".—P. L. LE ROUX.

CONN, H. F. [M.D.] [Edited by.] (1951.) **Current therapy 1951. Latest approved methods of treatment for the practicing physician.** pp. xxxi+699. Philadelphia & London: W. B. Saunders Co. $10. (50s.) **902**

The contributions to Current Therapy 1951 have been made by recognized authorities in the medical circles of the U.S.A. who have an active interest in the specific diseases discussed. The book deals solely with human medicine.

Since the appearance of the corresponding 1950 volume, 49 new Contributors have been added. Eighty-six of the "methods" are new and many others have been significantly changed.

The book is admirably arranged in 16 sections, making it an easy matter to find any particular reference to treatment of a specific disease in human beings.—E.M.J.

PRATT, R. [Ph.D., Associate Professor of Pharmacognosy & Plant Physiology, Univer-

sity of California College of Pharmacy) & YOUNGKEN, H. W., JR. [Ph.D. Associate Professor & Chairman for Pharmacognosy, University of Washington College of Pharmacy.] (1951.) **Pharmacognosy.** pp. xi + 644. Philadelphia, London, Montreal: J. B. Lippincott Company. 70s. 903

The subject matter of this book, based on botany, chemistry, biochemistry, physiology and related sciences is presented in such a way that the study of properties of plant and animal cells can be readily appreciated by undergraduate students. The biosynthesis of constituents of plant and animal cells, the significance of the elaborated materials to the organism wherein they are formed and the significance of certain compounds as drugs are discussed, emphasis being on the chemical, physical and physiological principles and their integration and application, to bring out the factors involved in the production and application of drugs from plant and animal sources.

The book is divided into six parts: (1) General Aspects of Pharmacognosy, Definitions and Sources of Drug Materials; (2) An Introduction to Cellular Chemistry; (3) Utilization and Classification of Drugs; 4) Biosynthetic Products and Certain of Their Derivatives: Physiologic and Pharmaceutical Applications; (5) Practices and Procedures; (6) Pest and Weed Control: Problems in Public Health.

It does not attempt to cover highly specialized phases of the subject, but there are, however, certain omissions of drugs used on a large scale, as for example under the heading of Synthetic Antimalarials no mention is made of paludrine, an effective drug of low toxicity which is used extensively in many parts of the world.

The text is illustrated with excellent photographs, diagrams and structural formulae and is summarized in many tables. There is an appendix and an index. The paper and printing are very good and the binding is strong and serviceable.—E.M.J.

BOOKS RECEIVED

[Notice of recently received books in this list does not preclude review.]

BARON, A. L. (1950.) **Handbook of antibiotics.** pp. viii + 303. New York: Reinhold Publishing Corporation. $6.50.

BARTON, A. L. (1951.) **Dairy law, sum and substance.** pp. vii + 195. London: Charles Griffin & Co. Ltd. 7s. 6d.

BRAMBELL, W. F. R., HEMMINGS, W. A. & HENDERSON, M. (1951.) **Antibodies and embryos.** pp. 103. London: University of London, The Athlone Press. 12s. 6d.

BRONOWSKI, J. (1951.) **The common sense of science.** pp. 154. London: W. Heinemann Ltd. 8s. 6d.

CAPPELL, D. F. (Revised by). (1951.) **Muir's text-book of pathology.** pp. xx + 1090. London: Edward Arnold. 6th. Edit. 50s.

CASSIDY, H. G. & WEISSBERGER, A. (Edited by). (1951.) **Technique of organic chemistry. Vol. V. Adsorption and chromatography.** pp. 360. New York & London: Interscience Publishers, Inc. $. 7.

COOK, E. F. & MARTIN, E. W. [Edited by.] (1951.) **Remington's practice of pharmacy.** pp. 1616. Easton, Pa.: Mack Publishing Co. $16.

DRIVER, J. E. [Revised by.] (1951.) **Bentley & Driver's text-book of pharmaceutical chemistry.** pp. ix + 671. London: New York: Toronto: Geoffrey Cumberlege, Oxford University Press. 5th Edit. 32s. 6d.

HAGAN, W. A. & BRUNER, D. W. (1951.) **The infectious diseases of domestic animals, with special reference to etiology, diagnosis and biologic therapy.** pp. xxxii + 920. London: Bailliere, Tindall & Cox. (2nd Edit.) 63s.

HARROW, B., STONE, G. C. H., WAGREICH, H., BOREK, E. & MAZUR, A. (1950.) **Laboratory manual of biochemistry.** pp. ix + 149. Philadelphia & London: W. B. Saunders Co. 3rd Edit. 12s. 6d.

HOFFBAUER, F. W. [Edited by.] (1951.) **Liver injury. Transactions of the Ninth Conference April 27 & 28, 1950, New York.** pp. 232. New York: Josiah Macy, Jr. Foundation. $3.00.

LACHENSCHMID, B. (1952.) Praktikum der tierärztlichen Schlachttier- und Fleischbeschau. Anleitung zur Untersuchung und Beurteilung der Schlachttiere nach den Bestimmungen des Fleischbeschaugesetzes. **[Practice of meat inspection.]** pp. x + 294. Stuttgart: Ferdinand Enke. 4th Edit. DM. 15.50.

DE LAVERGNE, V. (1951.) La maladie infectieuse. Microbes pathogènes; mécanismes et modalités de l'infection; applications au diagnostic et au traitement. **[Infectious diseases. Pathogenic micro-organisms, mechanism and mode of infection, diagnosis and treatment.]** pp. vi + 368. Paris: Masson et Cie. 2200 Fr.

LEDERBERG, J. (1951.) **Papers in microbial genetics, bacteria & bacterial viruses.** (1951). pp. xx + 303. Madison, Wisconsin: University of Wisconsin Press. $ 3.75.

LEFANU, W. R. (1951.) **A bio-bibliography of Edward Jenner, 1749-1823.** pp. xx + 176. London: Harvey & Blythe, Ltd. 84s.

MATHIEU & KORKHAUS, R. (1951.) Tierschutz-Taschenbuch **[Manual on protection of animals].** pp. 183. Hanover: M. & H. Schaper. 5th Edit. DM. 6.

MULINOS, I. L. (1951.) **Pharmacology.** pp. viii + 484. London: Oxford University Press. 40s.

NACHMANSOHN, D. [Edited by.] (1951.) **Nerve impulse. Transactions of the Second Conference, March 1-2, 1951, New York.** pp. 204. New York: Josiah Macy, Jr. Foundation. $3.50.

RALLI, E. P. [Edited by.] (1951.) **Adrenal cortex. Transactions of the Second Conference, November 16-17, 1950, New York.** pp. 209. New York: Josiah Macy, Jr. Foundation. $3.00.

ROONEY, J. R. (1951.) **Guide to the dissection of the horse.** pp. v + 183. New York: Cornell Co-operative Society.

ROSKAM, J. (1951.) L'hémostase spontanée. **[The clotting of blood.]** pp. 188. Paris: Masson & Cie. Fr. 1450.

SHOCK, N. W. [Edited by.] (1951.) **Problems of aging. Transactions of the Thirteenth Conference, February 5-6, 1951, New York.** pp. 194. New York: Josiah Macy, Jr. Foundation. $4.00.

SMITH, H. W. (1951.) **The kidney. Structure and formation in health and disease.** pp. 1049. New York and London: Oxford University Press. 100s.

VEAL, T. H. P. (1950.) **The supply of water.** pp. xi + 276. London: Chapman & Hall Ltd. 2nd Edit. 25s.

WATERS, R. M. (Edited by). (1951.) **Chloroform. A study after 100 years.** pp. xiii + 138. Madison, Wisconsin: University of Wisconsin Press. $ 2.75.

WEICHERT, C. K. (1951.) **Anatomy of the chordates.** pp. vii + 921. New York, Toronto & London: McGraw-Hill Book Co. Inc. 1st Edit. 68s.

WERNSTEDT, W. (1951.) Medicinsk terminologi. **[Medical terminology.]** pp. 560. Stockholm: Aktiebolaget Nordiska Bokhandelns.

ZWEIFACH, B. W. & SHORR, E. (1951.) **Factors regulating blood pressure: Transactions of the Fourth Conference, February 23-24, 1950, New York, N.Y.** pp. 219. New York: Josiah Macy Jr. Foundation. $3.

ZWEIFACH, B. W. & SHORR, E. [Edited by.] (1951.) **Factors regulating blood pressure. Transactions of the Fifth Conference, February 15-16, 1951, New York.** pp.238. New York: Josiah Macy, Jr. Foundation. $3.75.

ANON. (1951.) **Symposia of the Society for Experimental Biology. No. 4. Physiological mechanisms in animal behaviour.** pp. vi + 482. London: Cambridge University Press. 35s.

ANON. (1951.) **Management and conservation of vegetation in Africa. A symposium by scientists in the British Commonwealth countries of Africa.** pp. 97. Farnham Royal, Slough: Commonwealth Agricultural Bureaux. Bulletin No. 41 of the Commonwealth Bureau of Pastures and Field Crops, Aberystwyth. 10s. 6d.

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The semen of animals and its use for artificial insemination. By James Anderson. Spring, 1945 ... ... 7s. 6d.

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